

Quiz 1

1. Solve for x in the inequality $|3 - 2x| > 5$.

- A. $\{x \mid x > 4 \text{ or } x < -1\}$
 - B. $(-1, 4)$
 - C. $(-\infty, -4) \cup (1, \infty)$
 - D. All of the above.
 - E. None of the above.
-

2. What is an equation of the line thru the point $(-1, 6)$ and parallel to the line $x + 2y = 6$?

- A. $x + 2y = 11$
 - B. $y = \frac{11}{2} - \frac{1}{2}x$
 - C. $x = 11 - 2y$
 - D. All of the above.
 - E. None of the above.
-

3. What is the point on the y -axis that is equidistant from the points $(-5, 5)$ and $(1, 1)$?

- A. $(3, 0)$
 - B. $(-2, 3)$
 - C. $(0, 3)$
 - D. All of the above.
 - E. None of the above.
-

4. The graph of the equation $(x + 3)^2 + (y - 1)^2 = 4$ is

- A. the circle of radius 2 and center $(3, -1)$.
 - B. the circle of radius 2 and center $(-3, 1)$.
 - C. the circle of radius 4 and center $(3, -1)$.
 - D. All of the above.
 - E. None of the above.
-

5. The graph of the equation $x + y^2 = 4$ is

- A. a parabola opening to the right.
- B. a parabola opening to the left.
- C. a parabola opening down.
- D. a parabola opening up.
- E. None of the above.
- E. None of the above.

Quiz 2

1. What is an equation for the family of all linear functions f such that $f(3) = 2$?

A. $f(x) = m(x - 2) + 3$.

B. $f(x) = 3x + 2$.

C. $f(x) = 3mx + 2b$.

→D. None of the above.

2. If $g(x) = \sqrt{5 - x}$ then

A. the domain of g is $(-\infty, 5]$.

B. the range of g is $[0, +\infty)$.

C. the graph of g is half of a parabola.

→D. All of the above.

E. None of the above.

3. If $f(x) = x^2 - x$ then $\frac{f(x+h) - f(x)}{h} =$

A. $h - 1$.

→B. $2x + 1 - h$

C. $2x - 1 + h$.

D. None of the above.

4. In the graph on the next page, what is the equation for the graph labeled **2**?

A. $y = 1 + 3x - x^3$.

B. $y = x^3 - 2x^2 + 1$.

→C. $y = x^4 - 2x^2 + x + 1$.

D. None of the above.

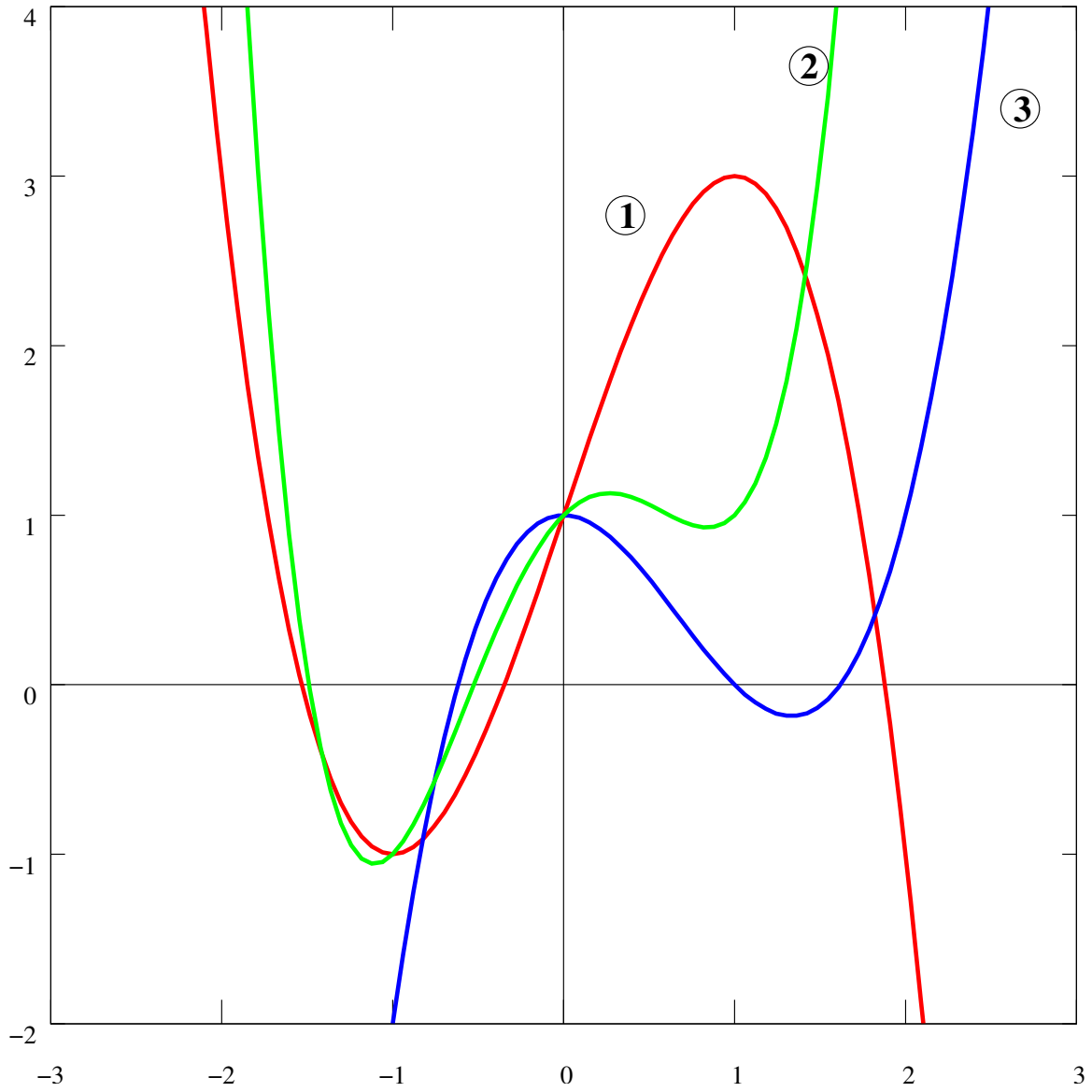
5. In the graph on the next page, which is the graph of the function $f(x) = 1 + 3x - x^3$?

→A. **1**.

B. **2**.

C. **3**.

D. None of the above.



Quiz 3

1. What is an equation for the family of all linear functions f such that $f(1) = 5$?

- A. $f(x) = m(x - 1) + 5$.
 - B. $f(x) = m(x - 5) + 1$.
 - C. $f(x) = m(x + 1) - 5$.
 - D. None of the above.
-

2. If $g(x) = 3 + |5 - x|$ then

- A. the domain of g is $(-\infty, 5]$.
 - B. the range of g is $[0, +\infty)$.
 - C. the graph of g is a parabola.
 - D. All of the above.
- E. None of the above.
-

3. If $f(x) = x^2 + 3$ then $\frac{f(x+h) - f(x)}{h} =$

- A. $h + 3$.
 - B. $2x - h$
- C. $2x + h$.
- D. None of the above.
-

4. In the graph on the previous page, what is the equation for the graph labeled **3**?

- A. $y = 1 + 3x - x^3$.
- B. $y = x^3 - 2x^2 + 1$.
- C. $y = x^4 - 2x^2 + x + 1$.
- D. None of the above.
-

5. In the graph on the previous page, which is the graph of the function $f(x) = x^4 - 2x^2 + x + 1$.

- A. **1**.
- B. **2**.
- C. **3**.
- D. None of the above.

Quiz 4

1. If $f(x) = 1/x$ then $\frac{f(x+h) - f(x)}{h} =$

→A. $-\frac{1}{(x+h)x}$.

B. $-\frac{1}{h}$.

C. $\frac{1}{h(x+h)x}$.

D. None of the above.

2. $\lim_{n \rightarrow \infty} \frac{n^3 - 2n^2 + 1}{5n^3 + n + 4} =$

→A. $1/5$.

B. $1/4$.

C. 0 .

D. None of the above.

3. $\lim_{n \rightarrow \infty} \frac{(-3)^n}{5^{n+1}} =$

A. $-3/5$.

→B. 0 .

C. $-\infty$.

D. None of the above.

4. $\lim_{n \rightarrow \infty} \frac{1}{n!} =$

A. $1/n$.

B. $1/n!$.

C. $+\infty$.

→D. None of the above.

5. $\lim_{n \rightarrow \infty} \sin(n) =$

A. 1 .

B. -1 .

C. 0 .

→D. None of the above.

Quiz 5

1. $\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{x - 2} =$

- A. 1.
 - B. 0.
 - C. -1.
 - D. None of the above.
-

2. $\lim_{x \rightarrow 3} \frac{x^2 - 5x + 6}{x - 3} =$

- A. 1.
 - B. 0.
 - C. -1.
 - D. None of the above.
-

3. $\lim_{x \rightarrow 0} \frac{|x|}{x} =$

- A. 1.
 - B. 0.
 - C. -1.
 - D. None of the above.
-

4. Given that $f(x) = 3x + 1$, what value of δ ensures that $|f(x) - 4| < 0.1$ whenever $|x - 1| < \delta$?

- A. $\delta = 0.1$.
 - B. $\delta = 0.2$.
 - C. $\delta = 0.3$.
 - D. All of the above.
 - E. None of the above.
-

5. Given that $f(x) = x/3$, what value of δ ensures that $|f(x) - 1| < 0.1$ whenever $|x - 3| < \delta$?

- A. $\delta = 0.1$.
- B. $\delta = 0.2$.
- C. $\delta = 0.3$.
- D. All of the above.
- E. None of the above.

Quiz 6

1. The graph of the equation $x - y^2 = 3 - y$ is

- A. a parabola opening to the right.
 - B. a parabola opening to the left.
 - C. a parabola opening up.
 - D. a parabola opening down.
 - E. None of the above.
-

2. What is an equation for the family of all linear functions f such that $f(3) = 2$?

- A. $f(x) = m(x - 3) + 2$.
 - B. $f(x) = 3x + 2$.
 - C. $f(x) = 3mx + 2b$.
 - D. None of the above.
-

3. If $f(x) = x - x^2$ then $\frac{f(x+h) - f(x)}{h} =$

- A. $1 + 2x + h$.
 - B. $1 + 2x - h$.
 - C. $1 - 2x + h$.
 - D. $1 - 2x - h$.
 - E. None of the above.
-

4. $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x^2 - x - 6} =$

- A. $9/6$.
 - B. 1 .
 - C. ∞ .
 - D. None of the above.
-

5. $\lim_{x \rightarrow -2} \frac{x^2 - 9}{x^2 - x - 6} =$

- A. $9/6$.
- B. 1 .
- C. ∞ .
- D. None of the above.

Quiz 7

1. Let $f(x) = \begin{cases} 1 - x^2, & \text{if } x < -2; \\ x - 1, & \text{if } -2 \leq x < 1; \\ x^2, & \text{if } 1 \leq x. \end{cases}$ Where is f discontinuous?

- A. -2
 - B. 1
 - C. Both.
 - D. Nowhere.
-

2. Let $f(x) = \begin{cases} 3 - x, & \text{if } x < 0; \\ x^2, & \text{if } 0 \leq x < 3; \\ 2x + 3, & \text{if } 3 \leq x. \end{cases}$ Where is f discontinuous?

- A. 0
 - B. 3
 - C. Both.
 - D. Nowhere.
-

3. What is an equation of the tangent line to the curve $y = x - x^2$ at the point $(1, 0)$?

- A. $y = -x$
 - B. $y = -(x - 1)$
 - C. $y = x + 1$.
 - D. None of the above.
-

4. What is an equation of the tangent line to the curve $y = \sqrt{x}$ at the point $(4, 2)$?

- A. $y - 2 = \frac{1}{4}(x - 4)$
 - B. $y - 2 = \frac{1}{2}(x - 4)$
 - C. $y - 4 = \frac{1}{4}(x - 2)$
 - D. None of the above.
-

5. If an object's position is given by the formula $s = 3t^2 + 2t$ then its velocity at time $t = 2$ is

- A. 10
- B. 12
- C. 14
- D. None of the above.

Quiz 8

1. Let $f(x) = \begin{cases} 3 + x, & \text{if } x < -2; \\ (x + 1)^2, & \text{if } -2 \leq x < 0; \\ \sqrt{x} + 1, & \text{if } 0 \leq x. \end{cases}$ Where is f discontinuous?
- A. -2
B. 0
C. Both.
→D. Nowhere.
-

2. Let $f(x) = \begin{cases} 3/(x - 1), & \text{if } x < 0; \\ 2x - 3, & \text{if } 0 \leq x. \end{cases}$ Where is f discontinuous?
- A. 0
B. 1
C. Both.
→D. Nowhere.
-

3. What is an equation of the tangent line to the curve $y = 4 - 3x^2$ at the point $(1, 1)$?
- A. $y - 1 = -2(x - 1)$
B. $y - 1 = -3(x - 1)$
→C. $y - 1 = -6(x - 1)$.
D. None of the above.
-

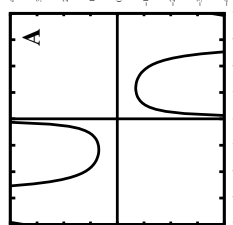
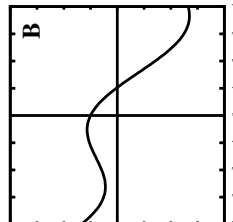
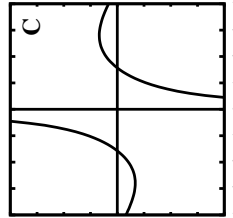
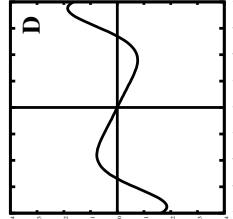
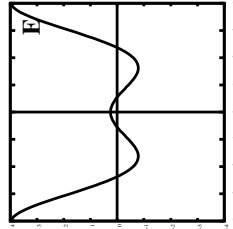
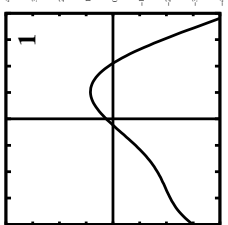
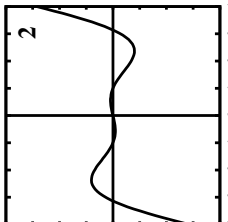
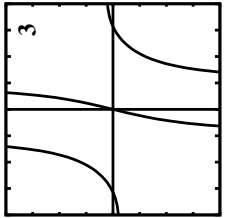
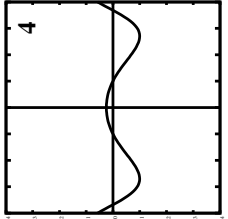
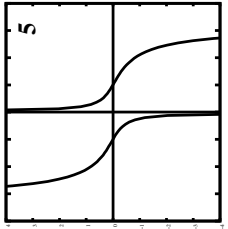
4. What is an equation of the tangent line to the curve $y = \sqrt{x - 2}$ at the point $(3, 1)$?
- A. $y - 3 = \frac{1}{2}(x - 1)$
→B. $y - 1 = \frac{1}{2}(x - 3)$
C. $y - 1 = \frac{1}{3}(x - 3)$
D. None of the above.
-

5. If an object's position is given by the formula $s = 3 + 2t - t^3$ then its velocity at time $t = 1$ is
- A. 2
B. 0
→C. -1
D. None of the above.

Quiz 9

Match the graphs of the functions **1–5** with those of their derivatives **A–E**. Use **F** for “None of these”.

1: B; 2: E; 3: F; 4: D; 5: F.



Quiz 10

1. True or false: If p is a polynomial then $\lim_{t \rightarrow 9} p(t) = p(9)$.

True.

2. True or false: If f is continuous on $[-1, 1]$ and if $f(-1) = 2$ and $f(1) = 0$ then there is a value t in the interval such that $f(t) = \sqrt{2}$.

True.

3. If $f(x) = (x^7 + 2x^3 - 5x^2 + 9)(3x^8 - x^7 + 8x^4 - 3x^2 + 6x)$ then $df/dx =$

A. $(7x^6 + 6x^2 - 10x)(24x^7 - 7x^6 + 32x^3 - 6x + 6)$.

B. $(7x^6 + 6x^2 - 10x) + (24x^7 - 7x^6 + 32x^3 - 6x + 6)$.

C. $(7x^6 + 6x^2 - 10x) \circ (24x^7 - 7x^6 + 32x^3 - 6x + 6)$.

D. All of the above.

→E. None of the above.

4. If $f(x) = 7\sqrt{\pi + 1}$ then $df/dx =$

A. $\frac{7}{2}\sqrt{\pi + 1}$.

B. $7 \cdot (2\sqrt{\pi + 1})^{-1}$.

C. $\frac{7}{2} \cdot (\pi + 1)^{-1/2}$.

D. All of the above.

→E. None of the above.

5. If $f(x) = \sqrt{x}/(x + 1)$ then $df/dx =$

→A. $(\frac{1}{2}x^{-1/2} \cdot (x + 1) - x^{1/2})/(x + 1)^2$.

B. $(\frac{1}{2}x^{-1/2} \cdot (x + 1) + x^{1/2})/(x + 1)^2$.

C. $(-\frac{1}{2}x^{-1/2} \cdot (x + 1) + x^{1/2})/(x + 1)^2$.

D. All of the above.

E. None of the above.

Quiz 11

1. True or false: If p and q are polynomials then $\lim_{t \rightarrow 9} (p(t)/q(t)) = p(9)/q(9)$.

False.

2. True or false: If $f(-1) = 1$ and $f(1) = 4$ then there is a value t in the interval such that $f(t) = \pi$.

False.

3. True or false: If f is continuous at a point a then f is differentiable at a .

False.

4. If $f(x) = 7\sqrt{x+1}$ then $df/dx =$

A. $\frac{7}{2}\sqrt{x+1}$.

B. $7 \cdot (2\sqrt{x+1})^{-1}$.

C. $\frac{7}{2} \cdot (x+1)^{-1/2}$.

→D. All of the above.

E. None of the above.

5. If $f(x) = (3x^9 - 2x^5 + 4x^2 + 8)^{11}$ then $df/dx =$

A. $11(3x^9 - 2x^5 + 4x^2 + 8)^{10}$.

B. $11(27x^8 - 10x^4 + 8x)^{10}$.

→C. $11(3x^9 - 2x^5 + 4x^2 + 8)^{10}(27x^8 - 10x^4 + 8x)$.

D. All of the above.

E. None of the above.

Quiz 12

1. If $f(x) = x \sin(x)$ then $df/dx =$

- A. $x + \cos(x)$.
 - B. $x \cos(x) + \sin(x)$.
 - C. $x \cos(x) + 1$.
 - D. None of the above.
-

2. If $g(t) = \sqrt{\sin(t)}$ then $dg/dt =$

- A. $\frac{1}{2} \cos(t) / \sqrt{\sin(t)}$.
 - B. $\frac{1}{2} / \sqrt{\cos(t)}$.
 - C. $\frac{1}{2} \sin(t) / \sqrt{\cos(t)}$.
 - D. None of the above.
-

3. If $H(x) = \tan(x)$ then $dH/dx =$

- A. $1 / \cos^2(x)$.
 - B. $\sin(x) / \cos^2(x)$.
 - C. $-\sin(x) / \cos^2(x)$.
 - D. None of the above.
-

4. If $Q(y) = \sec(y)$ then $dQ/dy =$

- A. $1 / \cos^2(y)$.
 - B. $\sin(y) / \cos^2(y)$.
 - C. $-\sin(y) / \cos^2(y)$.
 - D. None of the above.
-

5. If $y(t) = \sin^2(t) + \cos^2(t)$ then $dy/dt =$

- A. $2 \sin(t) \cos(t)$.
- B. $\cos^2(t) - \sin^2(t)$.
- C. 0.
- D. None of the above.

Quiz 13

1. $\lim_{t \rightarrow 0} \frac{\sin(3t)}{2t} =$

- A. 1.
 - B. 3/2.
 - C. 2/3.
 - D. None of the above.
-

2. $\lim_{h \rightarrow 0} \frac{\sin(x+h) - \sin(x)}{h} =$

- A. $\sin(x)$.
 - B. $\cos(x)$.
 - C. 1.
 - D. None of the above.
-

3. $\lim_{\theta \rightarrow 0^+} \sqrt{\cos(3\theta)} =$

- A. 1.
 - B. 3.
 - C. $\sqrt{3}$.
 - D. None of the above.
-

4. $\lim_{x \rightarrow 0} \frac{x}{\tan(x)} =$

- A. 1.
 - B. 0.
 - C. ∞ .
 - D. None of the above.
-

5. $\lim_{u \rightarrow 0} \frac{\sin(u)}{\tan(u)} =$

- A. 1.
- B. 0.
- C. ∞ .
- D. None of the above.

Quiz 14

1. $\lim_{t \rightarrow 0} \frac{\tan(2t)}{\sin(3t)} =$

- A. 1.
 - B. $2/3$.
 - C. ∞
 - D. 0.
 - E. None of the above.
-

2. $\lim_{t \rightarrow 0} \frac{\tan(2t)}{\cos(3t)} =$

- A. 1.
 - B. $2/3$.
 - C. ∞
 - D. 0.
 - E. None of the above.
-

3. If $f(x) = 3x^2 - 2$ then its tangent line at $(1, 1)$ has equation

- A. $y - 1 = 6(x - 1)$.
 - B. $y = 6x$.
 - C. $y - 1 = x + 6$.
 - D. None of the above.
-

4. If $f(x) = 3x^2 - 2$ then the linear approximation to $f(1 + \Delta x)$ is $L(\Delta x) =$

- A. $6\Delta x$.
 - B. $\Delta x + 6$.
 - C. $6\Delta x + 1$.
 - D. None of the above.
-

5. If $g(z) = 1/\sqrt{1+z^2}$ then $dg/dz =$

- A. $-\frac{1}{2}(1+z^2)^{-3/2}$.
- B. $-z/(1+z^2)^{3/2}$.
- C. $\frac{1}{2}/\sqrt{1+z^2}$.
- D. None of the above.

Quiz 15

1. If $y = \tan(t - t^3)$ then $dy/dt =$

- A. $\sec^2(1 - 3t^2)$.
 - B. $\sec^2(1 - 3t^2) \cdot (1 - 3t^2)$.
 - C. $\sec^2(t - t^3) \cdot (1 - 3t^2)$.
 - D. None of the above.
-

2. If $f(x) = \sqrt{1 + \sqrt{1 + x^2}}$ then $df/dx =$

- A. $\frac{1}{2}(1 + \sqrt{1 + x^2})^{-1/2} \cdot \frac{1}{2}(1 + x^2)^{-1/2}$.
 - B. $\frac{1}{2}(1 + \sqrt{1 + x^2})^{-1/2} \cdot 2x$.
 - C. $\frac{1}{2}(1 + \sqrt{1 + x^2})^{-1/2} \cdot \frac{1}{2}(2x)^{-1/2}$.
 - D. None of the above.
-

3. If $f(x) = \sqrt{x}$ then the linear approximation to $f(4 + \Delta x)$ is $L(\Delta x) =$

- A. Δx .
 - B. $\frac{1}{2}\Delta x + 2$.
 - C. $\frac{1}{4}\Delta x + 4$.
 - D. None of the above.
-

4. If $f(x) = \sin(x)$ then the linear approximation to $f(\frac{\pi}{2} + \Delta x)$ is $L(\Delta x) =$

- A. 0.
 - B. 1.
 - C. $\frac{\pi}{2}$.
 - D. Δx .
 - E. None of the above.
-

5. If $f(x) = \sin(x)$ then the linear approximation to $f(\Delta x)$ is $L(\Delta x) =$

- A. 0.
- B. 1.
- C. $\frac{\pi}{2}$.
- D. Δx .
- E. None of the above.

Quiz 16

1. An equation for the tangent line to the curve $y^2 + xy = 8$ at the point $(7, 1)$ is

→A. $y - 1 = -\frac{1}{9}(x - 7)$.

B. $y - 1 = -\frac{1}{7}(x - 7)$.

C. $y - 1 = -\frac{9}{7}(x - 7)$.

D. None of the above.

2. An equation for the tangent line to the curve $\sin^2(y) = x$ at the point $(\frac{3}{4}, \frac{\pi}{3})$ is

A. $y - \frac{\pi}{3} = -\frac{1}{2}(x - \frac{3}{4})$.

B. $y - \frac{\pi}{3} = \frac{1}{\sqrt{2}}(x - \frac{3}{4})$.

→C. $y - \frac{\pi}{3} = \frac{2}{\sqrt{3}}(x - \frac{3}{4})$.

D. None of the above.

3. If $f(x) = x^2$ then the linear approximation to $f(2 + \Delta x)$ is $L(\Delta x) =$

A. $2x$.

B. $2\Delta x$.

→C. $4\Delta x + 4$.

D. None of the above.

4. If $f(x) = \tan(x)$ then the linear approximation to $f(\Delta x)$ is $L(\Delta x) =$

A. 0.

B. 1.

→C. Δx .

D. None of the above.

5. If $f(x) = \sqrt{x}$ then the linear approximation to $f(9 + \Delta x)$ is $L(\Delta x) =$

A. $\frac{1}{2}x^{-1/2}$.

B. $\frac{1}{2}(\Delta x)^{-1/2}$.

C. $\frac{1}{2}(\Delta x)^{-1/2} + 3$.

→D. None of the above.

Quiz 17

1. If $x^3y + \sin(y) = \tan(x)$ then $dy/dx =$

A. $(\tan(x) \sec(x) - x^3)/(3x^2 + \cos(y))$.

B. $(\sec^2(x) - x^3)/(3x^2 + \cos(y))$.

C. $(\sec^2(x) - 3x^2)/(x^3 + \cos(y))$.

→D. None of the above.

2. If $f(x) = \sin(x^2)$ then $d^2f/dx^2 =$

A. $-2\sin(x^2) + x^2\cos(x^2)$.

B. $-\cos(x^2) \cdot 4x^2$.

→C. $2\cos(x^2) - 4x^2\sin(x^2)$.

D. None of the above.

3. The linear approximation to the graph of $x^2 + y^2 = 2$ at the point $(1, 1)$ is $L(\Delta x) =$

A. $-\Delta x$.

→B. $-\Delta x + 1$.

C. $-(\Delta x - 1) + 1$.

D. None of the above.

4. If $f(x) = x^2 - 7$ then Newton's Formula for $f(x)$ is $x_{i+1} =$

→A. $\frac{1}{2}(x_i + 7/x_i)$.

B. $2x_i \cdot (x_{i+1} - x_i) + (x_i^2 - 7)$.

C. $2x_i \cdot x_{i+1} - x_i^2 - 7$.

D. All of the above.

E. None of the above.

5. The x -intercept of the tangent line to the curve $y = x^3 - 4x + 1$ at the point $(0, 1)$ is

A. 0.

→B. $1/4$.

C. -1 .

D. None of the above.

Quiz 18

1. If $\sin(x - y) = \tan(x + y)$ then $dy/dx =$

A. $(\cos(x - y) - \sec^2(x + y))/(\tan(x + y) + \sin(x - y)).$

B. $(\tan(x + y) + \sin(x - y))/(\cos(x - y) - \sec^2(x + y)).$

→C. $(\cos(x - y) - \sec^2(x + y))/(\cos(x - y) + \sec^2(x + y)).$

D. None of the above.

2. If the position of an object is given by the formula $s(t) = t^3 + 3t^2 - 9t$ then object is moving forward on

A. $(-3, 1).$

B. $(-1, +\infty).$

→C. $(-\infty, -3) \cup (1, +\infty).$

D. None of the above.

3. If the position of an object is given by the formula $s(t) = t^3 + 3t^2 - 9t$ then object is accelerating on upwards) on

A. $(-3, 1).$

→B. $(-1, +\infty).$

C. $(-\infty, -3) \cup (1, +\infty).$

D. None of the above.

4. The linear approximation to the ellipse $4x^2 + y^2 = 8$ at the point $(-1, 2)$ is $L(\Delta x) =$

A. $\frac{1}{2}\Delta x - 1.$

B. $\frac{1}{2}\Delta x + 2.$

→C. $2\Delta x + 2.$

D. None of the above.

5. If $f(x) = x^n - A$ (where A and n are constant) then Newton's Formula for $f(x)$ is $x_{i+1} =$

A. $\frac{1}{2}(x_i + A/x_i^n).$

B. $\frac{1}{n}(x_i + A/x_i^{n-1}).$

→C. $\frac{1}{n}((n-1)x_i + A/x_i^{n-1}).$

D. None of the above.

Quiz 19

1. True or false: If $f(x) = \sin(2x)$ then there is a point c in the interval $(0, \pi/4)$ such that $f'(c) = 4/\pi$.
True.
2. True or false: If $f(x) = \sin(2x)$ then there is a point c in the interval $(0, \pi/4)$ such that $f'(c) = -4/\pi$.
False.
3. True or false: If $f(x) = \sin(2x)$ then for any points a and b we have that $|f(b) - f(a)| \leq 2 \cdot |b - a|$.
True.
4. True or false: If $f(x) = -x$ when $x < 0$ and $f(x) = 1$ when $x \geq 0$ then there is a point c in the interval $[-1, 1]$ such that $f(c) \leq f(x)$ for every x in the interval.
False.
5. True or false: If $f(x) = 2x$ when $x < 1$ and $f(x) = 2$ when $x \geq 1$ then there is a point c in the interval $[0, 3]$ such that $f(c) \geq f(x)$ for every x in the interval.
True.

Quiz 20

-
1. True or false: If $f(x) = x^3 - 3x^2 + 1$ then there is a point c in the interval $(0, 1)$ such that $f'(c) = -2$.
True.
-
2. True or false: If $f(x) = x^3 - 3x^2 + 1$ then there is a point c in the interval $(-1, 1)$ such that $f'(c) = 1$.
True.
-
3. True or false: If $f(x) = x^3 - 3x^2 + 1$ then there is a point c in the interval $(-1, 2)$ such that $f'(c) = 0$.
True.
-
4. True or false: If $f(x) = x^3 - 3x^2 + 1$ then for any points a and b in $(0, 2)$ we have that $|f(b) - f(a)| \leq 3 \cdot |b - a|$.
True.
-
5. True or false: If $f(x) = x^3 - 3x^2 + 1$ then for any points a and b in $(-1, 1)$ we have that $|f(b) - f(a)| \leq 3 \cdot |b - a|$.
False.

Quiz 21

1. The maximum value of $|2x - x^2|$ on $[0, 3/2]$ is

→A. 1.

B. $3/2$.

C. $3/4$.

D. None of the above.

2. The maximum value of $|2x - x^2|$ on $[-1, 2]$ is

A. 1.

B. 2.

→C. 3.

D. None of the above.

3. The minimum value of $|2x - x^2|$ on $[-1, 2]$ is

A. 1.

B. 2.

C. 3.

→D. None of the above.

4. True or false: If f is continuous on $[a, b]$ and differentiable on (a, b) then there is a point c in (a, b) such that $f'(c) = 0$.

False.

5. True or false: If f is continuous on $[a, b]$ and differentiable on (a, b) then there is a point c in (a, b) such that $f(b) - f(a) = f'(c) \cdot (b - a)$.

True.

Quiz 22

1. If $f(x) = \int_{-3}^x \sqrt{t^3 + 1} dt$ then $f'(x) =$

A. $\sqrt{t^3 + 1} dt.$

→ B. $\sqrt{x^3 + 1}.$

C. $\frac{1}{2}(t^3 + 1)^{-1/2} \cdot 3t^2 dt.$

D. $\frac{1}{2}(x^3 + 1)^{-1/2} \cdot 3x^2.$

E. None of the above.

2. If f is continuous on $[a, b]$ then there is a point c in (a, b) such that

A. $\int_a^b f' = (b - a) \cdot f(c).$

→ B. $\int_a^b f = (b - a) \cdot f(c).$

C. $f'(b) - f'(a) = (b - a) \cdot f(c).$

D. All of the above.

E. None of the above.

3. If $f(x) = |x|$ then $\int_{-2}^2 f =$

A. 0.

B. 1.

C. 2.

D. 3.

→ E. 4.

F. None of the above.

4. True or false: If f is continuous on (a, b) then f has an antiderivative on (a, b) .

True.

5. True or false: If f is continuous on (a, b) then f has a derivative on (a, b) .

False.

Quiz 23

1. $\int_0^4 \sqrt{x} \, dx =$

- A. $1/4$.
 - B. $16/3$.
 - C. 2 .
 - D. None of the above.
-

2. $\int_0^{\pi/4} \sec^2(x) \, dx =$

- A. 1 .
 - B. 2 .
 - C. $4/\pi$.
 - D. None of the above.
-

3. $\int_1^2 \frac{1}{x^2} \, dx =$

- A. 1 .
 - B. $1/2$.
 - C. $-1/2$.
 - D. None of the above.
-

4. $\int_0^{\pi/6} \sin(3x) \, dx =$

- A. $\int_0^{\pi/2} \sin(u) \, du$.
 - B. $\frac{1}{3} \int_0^{\pi/2} \sin(u) \, du$.
 - C. $\frac{1}{3} \int_0^{\pi/6} \sin(u) \, du$.
 - D. None of the above.
-

5. $\int_0^{\sqrt{3}} x\sqrt{x^2+1} \, dx =$

- A. $2\sqrt{3}$.
- B. $7/3$.
- C. $\sqrt{8}/3$.
- D. None of the above.