

# Classroom Voting Questions: Calculus I

## 3.5 The Trigonometric Functions

- $\frac{d}{dx}(-3 \sin x)$  is
  - $\cos x$
  - $-3 \sin x$
  - $3 \cos x$
  - $-3 \cos x$
  
- $\frac{d}{dx} \frac{\cos x}{25}$  is
  - $(\sin x)/25$
  - $-\sin x$
  - $(-\sin x)/25$
  - $(-\cos x)/25$
  
- $\frac{d}{dx}(10 \sin(12x))$  is
  - $120 \cos(12x)$
  - $10 \cos(12x)$
  - $120 \sin(12x)$
  - $-120 \cos(12x)$
  
- The 4th derivative of  $\sin x$  is
  - $\sin x$
  - $\cos x$
  - $-\sin x$
  - $-\cos x$
  
- The 10th derivative of  $\sin x$  is
  - $\sin x$

- (b)  $\cos x$
- (c)  $-\sin x$
- (d)  $-\cos x$

6. The 100th derivative of  $\sin x$  is

- (a)  $\sin x$
- (b)  $\cos x$
- (c)  $-\sin x$
- (d)  $-\cos x$

7. The 41st derivative of  $\sin x$  is

- (a)  $\sin x$
- (b)  $\cos x$
- (c)  $-\sin x$
- (d)  $-\cos x$

8. The 4th derivative of  $\cos x$  is

- (a)  $\sin x$
- (b)  $\cos x$
- (c)  $-\sin x$
- (d)  $-\cos x$

9. The 30th derivative of  $\cos x$  is

- (a)  $\sin x$
- (b)  $\cos x$
- (c)  $-\sin x$
- (d)  $-\cos x$

10. If  $f(x) = \frac{x}{\sin x}$ , then  $f'(x) =$

- (a)  $\frac{\sin x - x \cos x}{\sin^2 x}$
- (b)  $\frac{\sin x - x \cos x}{\cos^2 x}$

- (c)  $\frac{x \cos x - x \sin x}{\sin^2 x}$   
(d)  $\frac{\cos x - x \cos x}{\sin^2 x}$

11.  $\frac{d}{dx} \sin(\cos x)$  is

- (a)  $-\cos x \cos(\cos x)$   
(b)  $-\sin x \cos(\sin x)$   
(c)  $-\sin x \sin(\cos x)$   
(d)  $-\sin x \cos(\cos x)$

12. If  $f(x) = \sin x \cos x$ , then  $f'(x) =$

- (a)  $1 - 2 \sin^2 x$   
(b)  $2 \cos^2 x - 1$   
(c)  $\cos 2x$   
(d) All of the above  
(e) None of the above

13. If  $f(x) = \tan x$ , then  $f'(x) =$

- (a)  $\sec^2 x$   
(b)  $\cot x$   
(c)  $-\cot x$   
(d) All of the above  
(e) None of the above

14. We know that  $\frac{d}{dx} \sin x = \cos x$ . **True or False:**  $\frac{d}{dx} \sin(2x) = \cos(2x)$ .

- (a) True, and I am very confident  
(b) True, but I am not very confident  
(c) False, but I am not very confident  
(d) False, and I am very confident

15.  $\frac{d}{dx} (e^x \sin x)$  is

- (a)  $e^x \cos x$   
(b)  $e^x \sin x$

- (c)  $e^x \cos x + e^x \sin x$
- (d)  $e^x \sin x - e^x \cos x$

16.  $\frac{d}{dx} (\sin(x^2 + 5))$  is

- (a)  $\cos(x^2 + 5)$
- (b)  $\sin(2x + 5)$
- (c)  $2x \sin(x^2 + 5)$
- (d)  $2x \cos(x^2 + 5)$

17.  $\frac{d}{dx} (\sin^2(ax))$  is

- (a)  $2 \sin(ax)$
- (b)  $2 \cos(ax)$
- (c)  $2a \sin(ax)$
- (d)  $2a \sin(ax) \cos(ax)$

18.  $\frac{d}{dx} (\sin x + e^{\sin x})$  is

- (a)  $\cos x + e^{\cos x}$
- (b)  $\cos x + e^{\sin x}$
- (c)  $\cos x + e^{\sin x} \cos x$
- (d) None of the above

19. The equation of the line tangent to the graph of  $\cos x$  at  $x = 0$  is

- (a)  $y = 1$
- (b)  $y = 0$
- (c)  $y = \cos x$
- (d)  $y = x$

20. The equation of the line tangent to the graph of  $2 \sin 3x$  at  $x = \frac{\pi}{3}$  is

- (a)  $y = 6x - 2\pi$
- (b)  $y = 6x \cos 3x - 2\pi$
- (c)  $y = -6x + 2\pi$
- (d)  $y = -6x + 2\pi - 1$