

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) $y = -6x + 2\pi - 1$