

Calculus 1
Practice 5

Find the derivative.

1) $y = \frac{4}{x} + 3 \sec x$

1) _____

A) $y' = -\frac{4}{x^2} + 3 \sec x \tan x$

B) $y' = -\frac{4}{x^2} + 3 \tan^2 x$

C) $y' = -\frac{4}{x^2} - 3 \csc x$

D) $y' = \frac{4}{x^2} - 3 \sec x \tan x$

2) $s = t^4 \tan t - \sqrt{t}$

2) _____

A) $\frac{ds}{dt} = -t^4 \sec^2 t + 4t^3 \tan t + \frac{1}{2\sqrt{t}}$

B) $\frac{ds}{dt} = 4t^3 \sec^2 t - \frac{1}{2\sqrt{t}}$

C) $\frac{ds}{dt} = t^4 \sec^2 t + 4t^3 \tan t - \frac{1}{2\sqrt{t}}$

D) $\frac{ds}{dt} = t^4 \sec t \tan t + 4t^3 \tan t - \frac{1}{2\sqrt{t}}$

3) $s = t^7 \cos t - 13t \sin t - 13 \cos t$

3) _____

A) $\frac{ds}{dt} = t^7 \sin t - 7t^6 \cos t + 13t \cos t$

B) $\frac{ds}{dt} = -7t^6 \sin t - 13 \cos t + 13 \sin t$

C) $\frac{ds}{dt} = -t^7 \sin t + 7t^6 \cos t - 13t \cos t - 26 \sin t$

D) $\frac{ds}{dt} = -t^7 \sin t + 7t^6 \cos t - 13t \cos t$

4) $r = 6 - \theta^6 \cos \theta$

4) _____

A) $\frac{dr}{d\theta} = 6\theta^5 \sin \theta - \theta^6 \cos \theta$

B) $\frac{dr}{d\theta} = -6\theta^5 \cos \theta + \theta^6 \sin \theta$

C) $\frac{dr}{d\theta} = 6\theta^5 \cos \theta - \theta^6 \sin \theta$

D) $\frac{dr}{d\theta} = 6\theta^5 \sin \theta$

Find the indicated derivative.

5) Find y'' if $y = 5 \sin x$.

5) _____

A) $y'' = 25 \sin x$

B) $y'' = 5 \sin x$

C) $y'' = 5 \cos x$

D) $y'' = -5 \sin x$

6) Find $y^{(4)}$ if $y = -8 \cos x$.

6) _____

A) $y^{(4)} = -8 \cos x$

B) $y^{(4)} = -8 \sin x$

C) $y^{(4)} = 8 \sin x$

D) $y^{(4)} = 8 \cos x$

Given $y = f(u)$ and $u = g(x)$, find $dy/dx = f'(g(x))g'(x)$.

7) $y = u^2$, $u = 3x - 4$

7) _____

A) $9x - 12$

B) $24x - 12$

C) $18x - 24$

D) $18x$

8) $y = \frac{8}{u^2}, u = 8x - 5$

8) _____

A) $\frac{128x}{8x - 5}$

B) $-\frac{128}{(8x - 5)^3}$

C) $-\frac{64}{8x - 5}$

D) $-\frac{128}{8x - 5}$

9) $y = \sin u, u = \cos x$

9) _____

A) $\cos x \sin x$

B) $-\cos(\cos x) \sin x$

C) $\sin(\cos x) \sin x$

D) $-\cos x \sin x$

Find the derivative of the function.

10) $q = \sqrt{17r - r^5}$

10) _____

A) $\frac{1}{2\sqrt{17r - r^5}}$

B) $\frac{17 - 5r^4}{2\sqrt{17r - r^5}}$

C) $\frac{1}{2\sqrt{17 - 5r^4}}$

D) $\frac{-5r^4}{\sqrt{17r - r^5}}$

11) $y = (x + 1)^2(x^2 + 1)^{-3}$

11) _____

A) $\frac{-2(x + 1)(2x^2 + 3x - 1)}{(x^2 + 1)^4}$

B) $\frac{-2(x + 1)(2x^2 - 3x - 1)}{(x^2 + 1)^4}$

C) $\frac{2(x + 1)(2x^2 + 3x - 1)}{(x^2 + 1)^4}$

D) $\frac{2(x + 1)(2x^2 - 3x - 1)}{(x^2 + 1)^4}$

12) $h(x) = \left(\frac{\cos x}{1 + \sin x}\right)^5$

12) _____

A) $-5\left(\frac{\sin x}{\cos x}\right)^4$

B) $\left(-\frac{4 \sin x}{\cos x}\right)\left(\frac{\cos x}{1 + \sin x}\right)^4$

C) $5\left(\frac{\cos x}{1 + \sin x}\right)^4$

D) $\frac{-5 \cos^4 x}{(1 + \sin x)^5}$

Find dy/dt .

13) $y = \cos^5(\pi t - 8)$

13) _____

A) $5 \cos^4(\pi t - 8)$

B) $-5 \cos^4(\pi t - 8) \sin(\pi t - 8)$

C) $-5\pi \sin^4(\pi t - 8)$

D) $-5\pi \cos^4(\pi t - 8) \sin(\pi t - 8)$

14) $y = (1 + \sin 8t)^{-6}$

14) _____

A) $-48(\cos 8t)^{-7}$

B) $-48(1 + \sin 8t)^{-7} \cos 8t$

C) $-6(1 + \sin 8t)^{-7} \cos 8t$

D) $-6(1 + \sin 8t)^{-7}$

15) $y = \cos(\sqrt{6t + 12})$

15) _____

A) $\frac{3}{\sqrt{6t + 12}} \sin(\sqrt{6t + 12})$

B) $-\sin\left(\frac{3}{\sqrt{6t + 12}}\right)$

C) $-\sin(\sqrt{6t + 12})$

D) $-\frac{1}{2\sqrt{6t + 12}} \sin(\sqrt{6t + 12})$

Answer Key

Testname: CALC1PRACTICE_5

- 1) A
- 2) C
- 3) D
- 4) B
- 5) D
- 6) A
- 7) C
- 8) B
- 9) B
- 10) B
- 11) A
- 12) D
- 13) D
- 14) B
- 15) A