

Higher Derivatives

find the second derivative in each case:

1.

$$y = x^5$$

2.

$$y = 3x^4$$

3.

$$y = 2x^2 - 3x + 5$$

4.

$$y = 4x^4 + x^3 + 2x^2 - 3x + 5$$

5.

$$y = \sin(x)$$

6.

$$y = \sin(3x)$$

7.

$$y = e^{2x}$$

8.

$$y = e^{3x^4}$$

9.

$$y = \ln(x)$$

10.

$$y = \ln(\cos(x))$$

Higher Derivatives

answers:

- | | | | |
|----|------------------|-----|------------------------------------|
| 1. | $20x^3$ | 2. | $36x^2$ |
| 3. | 4 | 4. | $48x^2 + 6x + 4$ |
| 5. | $-\sin(x)$ | 6. | $-9\sin(3x)$ |
| 7. | $4e^{2x}$ | 8. | $144x^6 e^{3x^4} + 36x^2 e^{3x^4}$ |
| 9. | $-\frac{1}{x^2}$ | 10. | $-\frac{\sin^2(x)}{\cos^2(x)} - 1$ |