Calculus Worksheet #1 Unit 6 Selected Solutions

Find dy/dy for each of the following.

If y = sin(u) where u = f(x), then dy/dx = cos(u) du/dx.

If y = cos(u) where u = f(x), then dy/dx = -sin(u) du/dx.

3. $y = \sin(2x)$

$dy/dx = [\cos(2x)]\ (2)$

$dy/dx = 2\cos(2x)$

6. $y = \cos(7x - 3)$

$dy/dx = [-\sin(7x - 3)]\ (7)$

$dy/dx = -7\sin(7x - 3)$

9. $y = \sin(5x^3 - 1)$

$dy/dx = [\cos(5x^3 - 1)]\ (15x^2)$

$dy/dx = 15x^2\cos(5x^3 - 1)$

12. $y = \cos^3(x)$

$dy/dx = 3\cos^2(x)[-\sin(x)]\ (1)$

$dy/dx = -3\sin(x)\cos^2(x)$

15. $y = \sin\sqrt{x}$

$dy/dx = \cos\sqrt{x}\ \left[\frac{1}{2}\ x^{(-1/2)}\right]$

$$dy/dx = \frac{\cos\sqrt{x}}{2\sqrt{x}}$$

18. $y = \sqrt{\cos(x)} = [\cos(x)]^{(1/2)}$

$dy/dx = \frac{1}{2}[\cos(x)]^{(-1/2)}\ [-\sin(x)]\ (1)$

$$dy/dx = \frac{-\sin(x)}{2\sqrt{\cos(x)}}$$