

**Quiz #5: Monday, Oct 17**

Name: \_\_\_\_\_ Solution Key \_\_\_\_\_

Recitation R02 (M)

Find the derivative of each function below. The symbol  $C$  is a constant. Simplify your answers.

1.  $f(x) = 6x^3 - 5x + 3$

*Solution:*  $f'(x) = 6(3x^2) - 5(1) + 3 = 18x^2 - 5.$

2.  $g(t) = \frac{2}{t^3} + Ct^4$

*Solution:* Since  $g(t) = 2t^{-3} + Ct^4$ , we have

$$g'(t) = 2(-3t^{-4}) + C(4t^3) = -6t^{-4} + 4Ct^3 = -\frac{6}{t^4} + 4Ct^3.$$

3.  $h(z) = 6z^{4/3} + z^{-2}$

*Solution:*  $h'(z) = 6\left(\frac{4}{3}z^{1/3}\right) - 2z^{-3} = 8z^{1/3} - 2z^{-3}.$

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Recitation R02 (M)

Find the derivative of each function below. The symbol  $C$  is a constant. Simplify your answers.

1.  $f(x) = 2x^4 + 3x - 7$

*Solution:*  $f'(x) = 2(4x^3) + 3(1) - 0 = 8x^3 + 3.$

2.  $g(z) = Cz^3 + \frac{4}{z^2}$

*Solution:* Since  $g(z) = Cz^3 + 4z^{-2},$

$$g'(z) = C(3z^2) + 4(-2z^{-3}) = 3Cz^2 - 8z^{-3} = 3Cz^2 - \frac{8}{z^3}.$$

3.  $h(t) = 4t^{3/2} + t^{-3}$

*Solution:*  $h'(t) = 4\left(\frac{3}{2}t^{1/2}\right) - 3t^{-4} = 6t^{1/2} - 3t^{-4}.$

**Quiz #5: Tuesday, Oct 18**

Name: \_\_\_\_\_ Solution Key \_\_\_\_\_

Recitation R04 (Tu)

Find the derivative of each function below. The symbol  $C$  is a constant. Simplify your answers.

1.  $f(x) = 3x^4 - 2x + 5$

*Solution:*  $f'(x) = 3(4x^3) - 2(1) + 0 = 12x^3 - 2.$

2.  $g(u) = Cu^3 - \frac{3}{u^2}$

*Solution:* Since  $g(u) = Cu^3 - 3u^{-2},$

$$g'(u) = C(3u^2) - 3(-2u^{-3}) = 3Cu^2 + 6u^{-3} = 3Cu^2 + \frac{6}{u^3}.$$

3.  $h(w) = 6w^{2/3} + w^{-2}$

*Solution:*  $h'(w) = 6\left(\frac{2}{3}w^{-1/3}\right) - 2w^{-3} = 4w^{-1/3} - 2w^{-3}.$

**Quiz #5: Tuesday, Oct 18**

Name: \_\_\_\_\_ Solution Key \_\_\_\_\_

Recitation R04 (Tu)

Find the derivative of each function below. The symbol  $C$  is a constant. Simplify your answers.

1.  $f(x) = x^6 - 4x + 2$

*Solution:*  $f(x) = 6x^5 - 4.$

2.  $g(w) = \frac{1}{w^3} + Cw^4$

*Solution:* Since  $g(w) = w^{-3} + Cw^4,$

$$g'(w) = -3w^{-4} + C(4w^3) = -\frac{3}{w^4} + 4Cw^3.$$

3.  $h(u) = u^{-1} - 8u^{1/4}$

*Solution:*  $h'(u) = -u^{-2} - 8\left(\frac{1}{4}u^{-3/4}\right) = -u^{-2} - 2u^{-3/4}.$

**Quiz #5: Wednesday, Oct 19**

Name: \_\_\_\_\_ Solution Key \_\_\_\_\_

Recitation R03 (W)

Find the derivative of each function below. The symbol  $C$  is a constant. Simplify your answers.

1.  $f(x) = x^5 + 5x - 1$

*Solution:*  $f(x) = 5x^4 + 5.$

2.  $g(s) = s^{-2} - 4s^{3/2}$

*Solution:*  $g'(s) = -2s^{-3} - 4\left(\frac{3}{2}s^{1/2}\right) = -2s^{-3} - 6s^{1/2}.$

3.  $h(r) = Cr^5 + \frac{2}{r^3}$

*Solution:* Since  $h(r) = Cr^5 + 2r^{-3},$

$$h'(r) = C(5r^4) + 2(-3r^{-4}) = 5Cr^4 - 6r^{-4} = 5Cr^4 - \frac{6}{r^4}.$$

**Quiz #5: Wednesday, Oct 19**

Name: \_\_\_\_\_ Solution Key \_\_\_\_\_

Recitation R03 (W)

Find the derivative of each function below. The symbol  $C$  is a constant. Simplify your answers.

1.  $f(x) = 5x^3 + 6x - 2$

*Solution:*  $f'(x) = 5(3x^2) + 6(1) - 0 = 15x^2 + 6.$

2.  $g(r) = 6r^{5/3} + r^{-3}$

*Solution:*  $g'(r) = 6\left(\frac{5}{3}r^{2/3}\right) - 3r^{-4} = 10r^{2/3} - 3r^{-4}.$

3.  $h(s) = \frac{4}{s^2} + Cs^4$

*Solution:* Since  $h(s) = 4s^{-2} + Cs^4,$

$$h'(s) = 4(-2s^{-3}) + C(4s^3) = -8s^{-3} + 4Cs^3 = -\frac{8}{s^3} + 4Cs^3.$$