

Chain Rule

Differentiate each function. Give each answer in concise factored form.

1. $y = \frac{-3}{2} \cdot (2 \cdot x - 5)^3$

2. $y = \frac{-2}{3} \cdot (-4 \cdot x^2 - 6 \cdot x)^4$

3. $y = \frac{3}{2} \cdot (x^3 - 5 \cdot x^2)^5$

4. $y = -3 \cdot (-4 \cdot x - 3)^6$

5. $y = -1 \cdot (4 \cdot x^2 + 6)^3$

6. $y = \frac{-1}{2} \cdot (x^3 + 7 \cdot x^2)^4$

7. $y = 2 \cdot (2 \cdot x + 5)^5$

8. $y = \frac{1}{2} \cdot (-4 \cdot x^2 + 5 \cdot x)^6$

9. $y = \frac{2}{3} \cdot (-4 \cdot x^3 + 7 \cdot x^2)^3$

10. $y = (5 \cdot x - 2)^4$

Chain Rule

Answer Key

Differentiate each function. Give each answer in concise factored form.

1. $y = \frac{-3}{2} \cdot (2 \cdot x - 5)^3$
 $dy/dx = -9 \cdot (2 \cdot x - 5)^2$

2. $y = \frac{-2}{3} \cdot (-4 \cdot x^2 - 6 \cdot x)^4$
 $dy/dx = \left(\frac{64}{3} \cdot x + 16 \right) \cdot (-4 \cdot x^2 - 6 \cdot x)^3$

3. $y = \frac{3}{2} \cdot (x^3 - 5 \cdot x^2)^5$
 $dy/dx = \left(\frac{45}{2} \cdot x^2 - 75 \cdot x \right) \cdot (x^3 - 5 \cdot x^2)^4$

4. $y = -3 \cdot (-4 \cdot x - 3)^6$
 $dy/dx = 72 \cdot (-4 \cdot x - 3)^5$

5. $y = -1 \cdot (4 \cdot x^2 + 6)^3$
 $dy/dx = -24 \cdot x \cdot (4 \cdot x^2 + 6)^2$

6. $y = \frac{-1}{2} \cdot (x^3 + 7 \cdot x^2)^4$
 $dy/dx = (-6 \cdot x^2 - 28 \cdot x) \cdot (x^3 + 7 \cdot x^2)^3$

7. $y = 2 \cdot (2 \cdot x + 5)^5$
 $dy/dx = 20 \cdot (2 \cdot x + 5)^4$

8. $y = \frac{1}{2} \cdot (-4 \cdot x^2 + 5 \cdot x)^6$
 $dy/dx = (-24 \cdot x + 15) \cdot (-4 \cdot x^2 + 5 \cdot x)^5$

9. $y = \frac{2}{3} \cdot (-4 \cdot x^3 + 7 \cdot x^2)^3$
 $dy/dx = (-24 \cdot x^2 + 28 \cdot x) \cdot (-4 \cdot x^3 + 7 \cdot x^2)^2$

10. $y = (5 \cdot x - 2)^4$
 $dy/dx = 20 \cdot (5 \cdot x - 2)^3$