Derivatives — Chain rule

Name: _____ Date: _____

Find f'(x) with the chain rule: the derivative of the outside, times u'.

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

   $u = 3x + 2$, $u' = 3$
   $f'(x) = 2(3x + 2) \cdot 3$
   $= 6(3x + 2)$

2. $f(x) = (2x + 2)^3$

3. $f(x) = (3x + 3)^2$

4. $f(x) = (x + 2)^2$

5. $f(x) = (3x - 3)^3$

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

Derivatives · Chain rule — Answer key

1. $f(x) = (3x + 2)^2 \rightarrow f'(x) = 6(3x + 2)$

2. $f(x) = (2x + 2)^3 \rightarrow f'(x) = 6(2x + 2)^2$

3. $f(x) = (3x + 3)^2 \rightarrow f'(x) = 6(3x + 3)$

4. $f(x) = (x + 2)^2 \rightarrow f'(x) = 2(x + 2)$

5. $f(x) = (3x - 3)^3 \rightarrow f'(x) = 9(3x - 3)^2$

6. $f(x) = (-3x - 1)^3 \rightarrow f'(x) = -9(-3x - 1)^2$