Derivatives — Product rule

Name: _____ Date: _____

Find f'(x) with the product rule: u'v + uv'.

1. **f(x) = (2x − 3)(3x − 1)**

   u = 2x − 3, v = 3x − 1
   u' = 2, v' = 3
   f'(x) = 2(3x − 1) + (2x − 3)(3)
   = 6x − 2 + 6x − 9
   = 12x − 11

2. **f(x) = (−3x + 3)(−x + 1)**

3. **f(x) = (3x − 3)(−3x + 1)**

4. **f(x) = (−x + 3)(2x + 1)**

5. **f(x) = (−x − 3)(x + 3)**

6. **f(x) = (−3x + 3)(x − 2)**

Derivatives · Product rule — Answer key

1. $f(x) = (2x - 3)(3x - 1) \rightarrow f'(x) = 12x - 11$

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

3. $f(x) = (3x - 3)(-3x + 1) \rightarrow f'(x) = -18x + 12$

4. $f(x) = (-x + 3)(2x + 1) \rightarrow f'(x) = -4x + 5$

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

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