Answer key

The method: The product rule

$(uv)' = u'v + uv'$. Then multiply out and combine like terms.

$f(x) = (2x + 3)(x + 6)$ $f'(x) = 4x + 15$

$f'(x) = (2)(x + 6) + (2x + 3)(1)$ $(uv)' = u'v + uv'$

$(2)(x + 6) + (2x + 3)(1) = 4x + 15$ multiply out and combine

$f(x) = (x^2 + 5)(3x - 6)$ $f'(x) = 9x^2 - 12x + 15$

$f'(x) = (2x)(3x - 6) + (x^2 + 5)(3)$ $(uv)' = u'v + uv'$

$(2x)(3x - 6) + (x^2 + 5)(3) = 9x^2 - 12x + 15$ multiply out and combine

Problems 1 and 2 worked out · Version 0A

$f(x) = (3x)(2x + 5)$ $f'(x) = 12x + 15$

$f'(x) = (3)(2x + 5) + (3x)(2)$ $(uv)' = u'v + uv'$

$(3)(2x + 5) + (3x)(2) = 12x + 15$ multiply out and combine

$f(x) = (x^2 - 4)(4x + 5)$ $f'(x) = 12x^2 + 10x - 16$

$f'(x) = (2x)(4x + 5) + (x^2 - 4)(4)$ $(uv)' = u'v + uv'$

$(2x)(4x + 5) + (x^2 - 4)(4) = 12x^2 + 10x - 16$ multiply out and combine

The product rule · Version 0A

1) $12x + 15$ 2) $12x^2 + 10x - 16$ 3) $9x^2 - 10x + 3$
4) $8x$ 5) $9x^2 - 3$ 6) $18x - 6$ 7) $3x^2 - 10x + 2$
8) $24x + 5$ 9) $-3x^2 + 2x + 3$ 10) $-12x^2 - 2x + 20$
11) $-12x^2 + 2x + 12$ 12) $-9x^2 - 2x - 9$
13) $3x^2 + 10x + 3$ 14) $-2x + 6$ 15) $-9x^2 + 2x - 6$
16) $-8x$ 17) $-24x + 8$ 18) $16x - 24$