2(f) (cont.) $y' = \dfrac{2(3x-2) - (2x+5)3}{(3x-2)^2}$

Now simplify, but carefully: $3x-2$ is not a common factor in the numerator.

$y' = -19/(3x-2)^2$.

2(g) $y = \sqrt{4x^2+2} = (4x^2+2)^{1/2}$ (exponential form is best for work)

$y' = \frac{1}{2}(4x^2+2)^{-1/2} \cdot (4x^2+2)'$ [Chain Rule]

$= 4x^2/\sqrt{4x^2+2}$

3. $x^2 + 4xy - 2y^2 = 5$. Differentiate with respect to x, noting that y is a function of x

$$\frac{d}{dx}(x^2) + 4\frac{d}{dx}(xy) - 2\frac{d}{dx}(y^2) = \frac{d}{dx}(5)$$

$$2x + 4\underbrace{\left(\frac{dx}{dx}y + x\frac{dy}{dx}\right)}_{\text{product rule}} - 2\underbrace{\frac{d(y^2)}{dy}\frac{dy}{dx}}_{\text{chain rule!}} = 0$$

$$2x + 4\left(1\cdot y + x\frac{dy}{dx}\right) - 2\cdot 2y\frac{dy}{dx} = 0$$

Collect $\frac{dy}{dx}$ terms & solve for it:

$$\frac{dy}{dx}(4x - 4y) + 2x + 4y = 0$$

$$\frac{dy}{dx} = \frac{2x+4y}{4y-4x} = \boxed{\frac{x+2y}{2y-2x}}.$$