

In-class Worksheet Derivative Shortcuts 3

Differentiate the following functions.
Use a complete sentence for your answer.

1. $f(x) = 5x^2 - 3x + 2$

OK to skip
straight to this

$$f'(x) = 5 \cdot 2x^{2-1} - 3x^{1-1} + 0 = \boxed{10x - 3}$$

2. $y = \sqrt[3]{x} = x^{\frac{1}{3}}$

$$\frac{dy}{dx} = \frac{1}{3} x^{\frac{1}{3}-1} = \boxed{\frac{1}{3} x^{-\frac{2}{3}}}$$

3. $f(x) = \frac{x+2}{x-1}$

$$f'(x) = \frac{\frac{d}{dx}[x+2](x-1) - (x+2)\frac{d}{dx}[x-1]}{(x-1)^2}$$

$$= \boxed{\frac{1 \cdot (x-1) - (x+2) \cdot 1}{(x-1)^2}}$$

OK, since I did
not ask you
to simplify

$$= \frac{x-1-x-2}{(x-1)^2}$$

$$= \boxed{\frac{-3}{(x-1)^2}}$$

A more useful answer.
If I asked you to
simplify, this is the answer.