Calculus I

Derivative of reciprocal of linear polynomial squared

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Find the derivative of
$$y = \frac{2x^5}{7}$$
.

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$$y = \frac{2x^5}{7}$$
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$$y = \left(\frac{2}{7}\right)(x^5)$$
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$$\frac{\mathrm{d}y}{\mathrm{d}x}=\frac{\mathrm{d}}{\mathrm{d}x}\left[\left(\frac{2}{7}\right)(x^5)\right]$$

Find the derivative of
$$y=\frac{2x^5}{7}$$
.
$$y=\left(\frac{2}{7}\right)\left(x^5\right).$$

$$\frac{\mathrm{d}y}{\mathrm{d}x}=\frac{\mathrm{d}}{\mathrm{d}x}\left[\left(\frac{2}{7}\right)\left(x^5\right)\right]$$
 Constant Multiple Rule: $=\left(\frac{2}{7}\right)\frac{\mathrm{d}}{\mathrm{d}x}\left(x^5\right)$

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 Constant Multiple Rule:
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$$=\left(\frac{2}{7}\right)\left(5x^4\right)$$

Find the derivative of
$$y = \frac{2x^5}{7}$$
.
$$y = \left(\frac{2}{7}\right)(x^5).$$

$$\frac{dy}{dx} = \frac{d}{dx}\left[\left(\frac{2}{7}\right)(x^5)\right]$$
 Constant Multiple Rule:
$$= \left(\frac{2}{7}\right)\frac{d}{dx}(x^5)$$

$$= \left(\frac{2}{7}\right)\left(5x^4\right)$$

$$= \frac{10x^4}{7}$$
.

Find the derivative of u = -x.

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 $u = (-1)(x)$.

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$$\frac{du}{dt} = \frac{d}{dt} [(-1)(x)]$$

 $\frac{du}{dx} = \frac{d}{dx} \left[(-1)(x) \right]$ Constant Multiple Rule: $= (-1) \frac{d}{dx}(x)$

Find the derivative of
$$u = -x$$
.
 $u = (-1)(x)$.
 $\frac{du}{dx} = \frac{d}{dx}[(-1)(x)]$
Constant Multiple Rule: $= (-1)\frac{d}{dx}(x)$
 $= (-1)(?)$

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$$u = -x$$
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 $u = (-1)(x)$.
 $\frac{du}{dx} = \frac{d}{dx}[(-1)(x)]$
Constant Multiple Rule: $= (-1)\frac{d}{dx}(x)$
 $= (-1)(1)$

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.
 $u = (-1)(x)$.
 $\frac{du}{dx} = \frac{d}{dx}[(-1)(x)]$
Constant Multiple Rule: $= (-1)\frac{d}{dx}(x)$
 $= (-1)(1)$
 $= -1$.