April 19, 2016

6.6 #30) $5a^4 - 40a^3 - 45a^2$

$5a^2(a^2 - 8a - 9)$

$ac = -9$, $b = -8$

$-9 \mid +1$

$5a^2(a^2 - 9a + a - 9)$

$5a^2[a(a-9) + 1(a-9)]$

$5a^2(a-9)(a+1)$

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#19) $180a^5b^3 + 540a^4b^4 + 405a^3b^5$

$45a^3b^3(4a^2 + 12ab + 9b^2)$

$ac = 36$, $b = 12$

$+6 \mid +6$

$45a^3b^3(4a^2 + 6ab + 6ab + 9b^2)$

$45a^3b^3[2a(2a+3b) + 3b(2a+3b)]$

$45a^3b^3(2a+3b)(2a+3b)$

$45a^3b^3(2a+3b)^2$

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7.3 Simplifying Rational Expressions

① Multiplication

$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$ ← R.P

$\frac{-7x^2}{5y} \cdot \frac{3y^5}{14x^2} \to \frac{-1}{5} \cdot \frac{3y^4}{2}$ → R.P

$-\frac{3y^4}{10}$

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$\frac{x^2+x}{3x} \cdot \frac{6}{5x+5}$ (not a "1"!)

Steps
① Factor anything
② Divide out "ones"

$\frac{x(x+1)}{3x} \cdot \frac{2 \cdot 3}{5(x+1)}$

$\frac{1}{1} \cdot \frac{2}{5} = \frac{2}{5}$

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$\frac{6x+6}{7} \cdot \frac{14}{x^2-1}$

$\frac{6(x+1)}{7} \cdot \frac{14}{(x+1)(x-1)}$ ①

$\frac{6}{1} \cdot \frac{2}{x-1}$ ②

$\frac{12}{x-1}$

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$\frac{3x+3}{5x-5x^2} \cdot \frac{2x^2+x-3}{4x^2-9}$ ① Factor

$\frac{3(x+1)}{5x(1-x)} \cdot \frac{(2x+3)(x-1)}{(2x+3)(2x-3)}$ ← Simplify

$\frac{x-1}{*\,1-x}$

Factor out a (-1)

$1-x = -(-1+x) = -(x-1)$

$\frac{3(x+1)}{5x(x-1)} \cdot \frac{(x-1)}{(2x-3)}$

(-1) stays!

$\frac{3(x+1)}{-5x} \cdot \frac{1}{(2x-3)}$ R.P

$-\frac{3(x+1)}{5x(2x-3)}$

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$$\frac{2-x}{x-2} = \frac{2-x}{-(-x+2)}$$

stays

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

$$= \frac{1}{-1}$$

$$= -1$$

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