

Multiplying Polynomials

$$a) \frac{2x-8}{x+3} \cdot \frac{x^2+4x+3}{x^2-16}$$

$$= \frac{2(x-4)}{x+3} \cdot \frac{(x+3)(x+1)}{(x-4)(x+4)}$$

$$= \frac{2(x+1)}{x+4}$$

nPV
x = -3
x = 4
x = -4

$$b) \frac{m-7}{5m^2-13m+8} \cdot (5m-8)$$

$$= \frac{m-7}{(m-1)(5m-8)} \cdot (5m-8)$$

$$= \frac{m-7}{m-1}$$

$5m^2-13m+8$
$= 5m^2-5m-8m+8$
$= 5m(m-1)-8(m-1)$
$= (m-1)(5m-8)$
nPV
m = 1
m = $\frac{8}{5}$

$$c) \frac{r^2+18r+80}{2r+16} \cdot \frac{r+6}{9r^2+54r^2}$$

$$= \frac{(r+10)(r+8)}{2(r+8)} \cdot \frac{r+6}{9r^2(r+6)}$$

$$= \frac{r+10}{18r^2}$$

nPV
r = -8
r = 0
r = -6

$$d) \frac{2x^2+x-6}{x^2-2x-8} \cdot \frac{2x^2-x-3}{x^2-3x-4}$$

$$= \frac{(x+2)(2x-3)}{(x-4)(x+2)} \cdot \frac{(2x-3)(x+1)}{(x-4)(x+1)}$$

$$= \frac{(2x-3)^2}{(x-4)^2}$$

$2x^2+x-6$
$= 2x^2+4x-3x-6$
$= 2x(x+2)-3(x+2)$
$= (x+2)(2x-3)$
$2x^2-x-3$
$= 2x^2-3x+2x-3$
$= x(2x-3)+(2x-3)$
$= (2x-3)(x+1)$
nPV
x = 4
x = -2
x = -1

$$e) \frac{7n-3n-n^2}{n^2+9n-10} \cdot \frac{1}{7-n}$$

$$= \frac{-(n+10)(n-7)}{(n+10)(n-1)} \cdot \frac{1}{7-n}$$

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

$7n-3n-n^2$
$= -n^2-3n+7n$
$= -(n^2+3n-7n)$
$= -(n+10)(n-7)$
nPV
n = -10
n = 1
n = 7

$$f) \frac{x^2+4x+3}{2x^2-x-10} \cdot \frac{2x^2+4x^3}{x^2+3x} \cdot \frac{x}{x^2+3x+2}$$

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

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

nPV
x = $\frac{5}{2}$
x = -3
x = -1
x = -2
x = 0

To save space, I did not show factoring the complex trinomial for this product.