

Factoring & Rationalizing the Denominator

Date _____

Period _____

Factor each completely.

1) $(42r^3 + 7r^2)(-24r - 4)$

$$7r^2(6r+1) - 4(6r+1)$$

$$(7r^2 - 4)(6r + 1)$$

2) $(42x^3 + 7x^2)(-18x - 3)$

$$7x^2(6x+1) - 3(6x+1)$$

$$(7x^2 - 3)(6x + 1)$$

3) $(49x^3 - 28x^2)(-21x + 12)$

$$7x^2(7x-4) - 3(7x-4)$$

$$(7x^2 - 3)(7x - 4)$$

4) $(32x^3 - 56x^2)(-4x + 7)$

$$8x^2(4x-7) - 1(4x-7)$$

$$(8x^2 - 1)(4x - 7)$$

5) $2k^2 - 5k + 3$

* $2 \cdot 3 = 6$

$$(2k^2 - 2k) + (-3k + 3)$$

$$2k(k-1) - 3(k-1)$$

$$(2k-3)(k-1)$$

6) $5a^2 + 22a + 8$

* $5 \cdot 8 = 40$

$$(5a^2 + 20a) + (2a + 8)$$

$$5a(a+4) + 2(a+4)$$

$$(5a+2)(a+4)$$

7) $5n^2 - 9n - 18$

* $5 \cdot -18 = -90$

$$(5n^2 - 15n) + (6n - 18)$$

$$5n(n-3) + 6(n-3)$$

$$(5n+6)(n-3)$$

8) $2x^2 - 9x - 35$

* $2 \cdot -35 = -70$

$$(2x^2 - 14x) + (5x - 35)$$

$$2x(x-7) + 5(x-7)$$

$$(2x+5)(x-7)$$

Simplify.

$$9) \frac{15}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} \\ = \frac{15\sqrt{5}}{5 \cdot 5} = \frac{3\sqrt{5}}{1} = \boxed{3\sqrt{5}}$$

$$10) \frac{5}{\sqrt{13}} \cdot \frac{\sqrt{13}}{\sqrt{13}} = \boxed{\frac{5\sqrt{13}}{13}}$$

$$11) \frac{6}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \boxed{\frac{6\sqrt{7}}{7}}$$

$$12) \frac{3}{4\sqrt{11}} \cdot \frac{\sqrt{11}}{\sqrt{11}} = \frac{3\sqrt{11}}{4 \cdot 11} = \boxed{\frac{3\sqrt{11}}{44}}$$

$$13) \frac{5}{3\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{3 \cdot 2} = \boxed{\frac{5\sqrt{2}}{6}}$$

$$14) \frac{2}{4\sqrt{17}} \cdot \frac{\sqrt{17}}{\sqrt{17}} = \frac{2\sqrt{17}}{4 \cdot 17} = \frac{2\sqrt{17}}{68} \stackrel{\div 2}{=} \\ = \boxed{\frac{\sqrt{17}}{34}}$$