# Factoring Review

1) $b^2 - 49$

$\sqrt{b^2} = b$

$\sqrt{49} = 7$

diff. of squares!

$\boxed{(b+7)(b-7)}$

2) $6v^3 + 42v^2$

$\boxed{6v^2(v+7)}$ ✓ GCF!

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

$\boxed{(x-1)(6x+7)}$

4) $2v^2 + 10v - 48$

$2(v^2 + 5v - 24)$

$\boxed{2(v-3)(v+8)}$

5) $2x^3 - 20x^2 + 42x$

$2x(x^2 - 10x + 21)$

$\boxed{2x(x-3)(x-7)}$

# Unit 6 - Rational Functions

## 1: Simplifying Rational Expressions

Ex 1) $\dfrac{27}{27x+18} = \dfrac{27 \div 9}{9 \div 9(3x+2)} = \boxed{\dfrac{3}{3x+2}}$

Ex 2) $\dfrac{v^2-7v-30}{v^2-5v-24} = \dfrac{(v-10)\cancel{(v+3)}}{\cancel{(v+3)}(v-8)} = \boxed{\dfrac{v-10}{v-8}}$

* can cancel since they are being multiplied

$v \neq -3, 8$

Restrictions: "problems in our function"

Ex 3) $\dfrac{v^2-5v-14}{v^2+4v+4} = \dfrac{\cancel{(v+2)}(v-7)}{\cancel{(v+2)}(v+2)} = \boxed{\dfrac{v-7}{v+2}}$

$v \neq -2$

Ex 4) $\frac{4n-4}{6n-20} = \frac{2\cancel{4}(n-1)}{\cancel{2}(3n-10)} = \boxed{\frac{2(n-1)}{3n-10}}$ $\{n \neq \frac{10}{3}\}$

Restrictions: $3n-10=0$
$+10 \quad +10$
$\frac{3n}{3} = \frac{10}{3}$

* LOOK for a GCF 1st Always

Ex 5) $\frac{9x^2+81x}{x^3+8x^2-9x} = \frac{9x(x+9)}{x(x-1)(x+9)} = \boxed{\frac{9}{x-1}}$

$x(x^2+8x-9)$

$\{x \neq -9, 1, 0\}$

Ex 6) $\frac{a^4b-2a^4}{2a^3-a^3b} = \frac{a^4(b-2)}{a^3(2-b)} = \frac{a(b-2)}{-1(-2+b)} = \boxed{-a}$

$\frac{a^4}{a^3} = a^{4-3} = a$

$\{a \neq 0, b \neq 2\}$

Try!

$\frac{r^2+8r-20}{3r^3+24r^2-60r} = \frac{(r+10)(r-2)}{3r(r+10)(r-2)} = \boxed{\frac{1}{3r}}$

$3r(r^2+8r-20)$

$\{r \neq 2, -10, 0\}$