Key

Reassessment Review

IF1: I can factor and solve quadratics (Optional)

Study factoring by gcf, grouping, long and short abc, difference of squares. Also study Quadratic Formula.

Factor the following:

9. $125x^2 - 36$ ← supposed to be 25

$(5x-6)(5x+6)$

3. $2x^2 + 4x - 70$

GCF: $2(x^2+2x-35)$

-35 | 2

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

Solve the following:

13. $2x^2 + 1 = 3x$

Long abc

$2x^2-3x+1=0$

$2x^2-2x-x+1$

$2x(x-1)-1(x-1)$

$(2x-1)(x-1)$

14. $5x^2 = 50x$ (hint: QF)

There are other ways to do this!

$5x^2-50x=0$

$5(x^2-10x)=0$

$a=1$

$b=-10$

$c=0$

$x = \frac{10 \pm \sqrt{100-4(1)(0)}}{2} = \frac{10 \pm \sqrt{100}}{2}$

$x = \frac{10+10}{2} = \frac{20}{2} = 10$

$x = \frac{10-10}{2} = 0$

IF2: Complex Numbers (Optional)

Know how to work with imaginary numbers (i).

1. $\sqrt{-25}$ = $5i$

CLT 2. $(3+2i)+(4-11i)$

$7-9i$

3. $(4+2i)(7+3i)$

$28+14i+12i+6i^2$

$28+26i-6$

$22+26i$

4. $4i\sqrt{-100}$

$4i \cdot 10i = 40i^2$

$= -40$

IF3: Operations with Polynomials (Optional)

Study how to add/subtract/multiply polynomials.

CLT 1. $(20x^2+15x+13)+(-19x^2+17)$

$x^2+15x+30$

3. $-x^2(x+5)$

$-x^3-5x^2$

2. $(-18x^3+4x-16)-(15x^2+4x-1)$ CLT

$-18x^3-15x^2-15$

4. $(x-7)(x^2-6x+3)$

$x^3-6x^2+3x-7x^2+42x-21$

$x^3-13x^2+45x-21$

IF4: Factoring ALL polynomials (Mandatory)

Study ALL types of factoring.

-600 | 7
-5, 12

1. $144x^2 - 289$

$(12x-17)(12x+17)$

2. $2x^4 + 7x^2 - 30$

$2x^4+12x^2-5x^2-30$

$2x^2(x^2+6)-5(x^2+6)$

$(2x^2-5)(x^2+6)$

3. $27x^3 - 64$

$(3x-4)(9x^2+12x+16)$

4. $x^3 + 125$

$(x+5)(x^2-5x+25)$

IF5: Solving ALL polynomials (Mandatory)

This was your last test. Study setting each factor to zero, dividing polynomials, rational root theorem, and writing equations.

Find all roots.

QF: $x = \frac{-6 \pm \sqrt{36-4(1)(30)}}{2}$

1. $(3x-1)(x+2)(x-4) = 0$

$3x=1$ | $x=-2$ | $x=4$

$x = \frac{1}{3}$

2. $x^3 = 216$

$x^3-216=0$

$(x-6)(x^2+6x+36)=0$

$x=6$

$x = \frac{-6 \pm \sqrt{-108}}{2}$

$x = \frac{-6 \pm i\sqrt{108}}{2}$

Divide each polynomial to decide if the dividend is a factor

3. $(2x^3 + 7x^2 - 7x - 30) \div (x+3)$

3 | 2 7 -7 -30
6 39 96
2 13 32 | 66

$2x^2+13x+32+\frac{66}{x-3}$

Not a factor

4. $(4x^3 - 2x + 1) \div (x-2)$ (missing x^2)

2 | 4 0 -2 1
8 16 28
4 8 14 | 29

$4x^2+8x+14+\frac{29}{x-2}$

Not a factor.

5. Use Rational Root Theorem to find all possible zeros of: $3x^6 + 6x - 8x + 10 = 0$

$\frac{\pm 10, \pm 1, \pm 5, \pm 2}{\pm 3, \pm 1}$ $\Rightarrow \pm\frac{10}{3}, \pm 10, \pm\frac{1}{3}, \pm 1, \pm\frac{5}{3}, \pm 5, \pm\frac{2}{3}, \pm 2$

None are actual roots

Write the equation given the roots:

6. $x = 3, 5, i$

$(x-3)(x-5)(x-i)(x+i)$

$(x-3)(x-5)(x^2+1)$

$(x^2-8x+15)(x^2+1)$

$x^4+x^2-8x^3-8x+15x^2+15$

$y = x^4-8x^3+16x^2-8x+15$

7. $x = 0, 0, 2$

$(x-0)(x-0)(x-2)$

$x \cdot x \cdot (x-2)$

$x^2(x-2)$

$y = x^3-2x^2$