

Station One

Team Number \_\_\_\_\_

Factor:  $x^4 + 9x^3 - x - 9$

$$x^3(x+9) - 1(x+9)$$

$$(x^3 - 1)(x+9)$$

$$(x-1)(x^2+x+1)(x+9)$$

Station Two

Team Number \_\_\_\_\_

Find all roots:  ~~$x^3 - 8x^2 - 6x - 27$~~

~~$$(x-9)(x^2+x+3)$$~~

$$x^3 - 8x^2 - 6x - 27$$

~~$$-1 \pm \sqrt{1+16}$$~~

~~$$x^3 - 8x^2 - 6x - 27$$~~

$$9, \frac{-1 \pm i\sqrt{11}}{2}$$

Station Three

Team Number \_\_\_\_\_

Solve:  $2x^2 + 3x = 8$

$$\frac{-3 \pm \sqrt{9 - 4(2)(-8)}}{2(2)}$$

$$\frac{-3 \pm \sqrt{73}}{4}$$

Station Four

Team Number \_\_\_\_\_

Focus of  $y = -\frac{1}{60}x^2 - 7$

$$(0, -22)$$

$$\frac{1}{4(-\frac{1}{60})}$$

$$(0, -7)$$

Station Five

Team Number \_\_\_\_\_

Directrix of  $y = 4x^2 + 16x + 13$

~~4(4)~~

$\frac{1}{16}$

$$4(x^2 + 4x + 4 - 4) + 13$$

$$4((x+2)^2 - 4) + 13$$

$$y = -3\frac{1}{16}$$

$\frac{16}{13}$   
 $\frac{13}{2}$

-2, 24

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

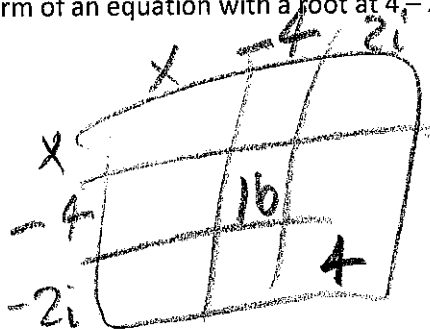
$$y = -3\frac{1}{16}$$

$\checkmark (-2, -3)$

Station Six

Team Number \_\_\_\_\_

General Form of an equation with a root at  $4 - 2i$  and a scale factor of 1.



$$(x - 4 - 2i)(x - 4 + 2i)$$

$$x^2 - 8x + 20$$

Station Seven

Team Number \_\_\_\_\_

Factor:  $216x^4 - 258x^3 - 210x^2$

$$6x^2(9x+5)(4x-7)$$

$$6x^2(36x^2 - 43x - 35)$$

$-\frac{5}{9}$   $\frac{7}{4}$  1.75

$$\frac{43 \pm 83}{2(36)}$$