

$$21) 4x^2 - 6x + 11 = 3$$

$$4x^2 - 6x + 8 = 0$$

$$a: 4 \quad b: -6 \quad c: 8$$

$$x = \frac{-(-6) \pm \sqrt{(-6)^2 - (4 \cdot 4 \cdot 8)}}{2(4)}$$

$$x = \frac{6 \pm \sqrt{36 - 128}}{8}$$

$$x = \frac{6 \pm \sqrt{-92}}{8}$$

$$x = \frac{6 \pm \sqrt{-4 \cdot 23}}{8}$$

$$x = \frac{6 \pm 2i\sqrt{23}}{8}$$

$$x = \frac{3 \pm i\sqrt{23}}{4}$$

Solve each equation by completing the square.

$$22) p^2 + 4p - 11 = 10$$

$$p^2 + 4p = 21$$

$$\frac{4}{2} = 2$$

$$2^2 = 4$$

$$p^2 + 4p + 4 = 21 + 4$$

$$(p+2)(p+2) = 25$$

$$(p+2)^2 = 25$$

$$p+2 = \pm\sqrt{25}$$

$$p+2 = \pm 5$$

$$p+2=5$$

$$p=3$$

$$p+2=-5$$

$$p=-7$$

$$23) a^2 + 14a - 15 = 4$$

$$a^2 + 14a = 19$$

$$\frac{14}{2} = 7$$

$$a^2 + 14a + 49 = 19 + 49$$

$$7^2 = 49$$

$$(a+7)(a+7) = 68$$

$$(a+7)^2 = 68$$

$$a+7 = \pm\sqrt{68}$$

$$a+7 = \pm\sqrt{4 \cdot 17}$$

$$a+7 = \pm 2\sqrt{17}$$

$$a = \pm 2\sqrt{17} - 7$$

$$24) x^2 + 18x + 80 = -4$$

$$x^2 + 18x = -84$$

$$\frac{18}{2} = 9$$

$$x^2 + 18x + 81 = -84 + 81 \quad 9^2 = 81$$

$$(x+9)(x+9) = -3$$

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

$$x+9 = \pm\sqrt{-3}$$

$$x = \pm\sqrt{-3} - 9$$

$$x = \pm i\sqrt{3} - 9$$

$$25) m^2 + 8m + 89 = 5$$

$$m^2 + 8m = -84$$

$$\frac{8}{2} = 4$$

$$m^2 + 8m + 16 = -84 + 16$$

$$4^2 = 16$$

$$(m+4)(m+4) = -68$$

$$(m+4)^2 = -68$$

$$m+4 = \pm\sqrt{-68}$$

$$m+4 = \pm\sqrt{-4 \cdot 17}$$

$$m+4 = \pm 2i\sqrt{17}$$

$$m = \pm 2i\sqrt{17} - 4$$

26) What is the difference between what the Quadratic Formula tells you vs what the Discriminant tells you?

THE QUADRATIC FORMULA GIVES YOU THE ZEROS OF THE FUNCTION.

THE DISCRIMINANT TELLS YOU HOW MANY ZEROS THERE ARE.

27) What is the value of i ?

$$\sqrt{-1}$$

28) What is the value of i^2 ?

$$-1$$

Simplify.

29) $8i - 6 - 4 + 5i$

$$\boxed{-10 + 13i}$$

30) $-2 + 4i - (-1 + 8i)$

$$-2 + 4i + 1 - 8i$$

$$\boxed{-1 - 4i}$$

31) $(-1 + 6i)(2 - 6i)$

$$= -2 + 6i + 12i - 36i^2$$

$$= -2 + 18i - 36(-1)$$

$$= -2 + 18i + 36$$

$$= \boxed{34 + 18i}$$

32) $(2 + 3i)^2 = (2 + 3i)(2 + 3i)$

$$= 4 + 6i + 6i + 9i^2$$

$$= 4 + 12i + 9(-1)$$

$$= 4 + 12i - 9$$

$$= \boxed{-5 + 12i}$$