

Name: Key

Quiz Review

*Calculator Inactive

$$a^2 - b^2 = (a + b)(a - b)$$

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

Factor Completely:

1) $x^2 - 5x - 36$

$(x-9)(x+4)$

2) $2x^2 - 10x - 12$

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

$$2(x-6)(x+1)$$

3) $2x^2 - 32$

$$2(x^2 - 16)$$

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

4) $2x^3 + 3x^2 - 18x - 27$

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

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

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

5) $8x^3 - 27$

$(2x-3)(4x^2+6x+9)$

6) $6x^2 + 13x - 5$

$$\overbrace{6x^2 + 13x - 5}^{-30}$$

$$\overbrace{+15}^{-2}$$

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

Solve: Any Method

7) $x^4 - 9x^2 = -8$

$$x^4 - 9x^2 + 8 = 0$$

$$(x^2 - 8)(x^2 - 1) = 0$$

$$x = \pm 2\sqrt{2} \quad x = \pm 1$$

8) $4x^2 = -12$

$$x^2 = -3$$

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

9) $9x^2 - 25 = 0$

$x = \pm \frac{5}{3}$

10.) $x^3 + 8 = 0$

$(x+2)(x^2-2x+4) = 0$

$x = -2$

$x = \frac{2 \pm \sqrt{4 - 4(1)(4)}}{2} = 1 \pm i\sqrt{3}$

11) $4x^2 + 7x = -3$

$$4x^2 + 7x + 3 = 0$$

$$(4x+3)(x+1) = 0$$

$$x = -3/4 \quad x = -1$$

12) $(x-1)^2 = 12$

$$x-1 = \pm 2\sqrt{3}$$

$$x = 1 \pm 2\sqrt{3}$$

13) $x^2 - 6x - 5 = 0$

$$x = \frac{6 \pm \sqrt{36 - 4(1)(-5)}}{2}$$

$$= \frac{6 \pm 2\sqrt{14}}{2} = 3 \pm \sqrt{14}$$

14) $(2x-5)^2 = -24$

$$2x-5 = \pm 2i\sqrt{6}$$

$$x = \frac{5 \pm 2i\sqrt{6}}{2}$$

15.) $4x^3 - 36x^2 - x + 9 = 0$

$$4x^2(x-9) - 1(x-9) = 0$$

$$(x-9)(4x^2-1) = 0$$

$$x = 9 \quad x = \pm \frac{1}{2}$$

Simplify:

16) $i^{54} = -1$

$$17) (4i\sqrt{3})^2$$

$$16i^2 \cdot 9$$

$$= -48$$

$$18) 5\sqrt{-8} \cdot \sqrt{-3}$$

$$10i\sqrt{2} \cdot (i\sqrt{3})$$

$$10i^2\sqrt{6} = -10\sqrt{6}$$

19) $2\sqrt{-3} + 5\sqrt{-12}$

$$2i\sqrt{3} + 10i\sqrt{3}$$

$$= 12i\sqrt{3}$$

20) i^{27}

$= -i$

21) $\frac{3}{5i} \left(\frac{i}{i} \right)$

$$= \frac{3i}{-5} \text{ or } -\frac{3i}{5}$$

$$22) \frac{5}{2-3i} \left(\frac{2+3i}{2+3i} \right) = \frac{10+15i}{4-9i^2}$$

$$= \frac{10+15i}{13}$$

$$23) (2i-3)(4i+1)$$

$$8i^2 + 2i - 12i - 3$$

$$= -11 - 10i$$

$$24) (2-5i) - (3+2i)$$

$$-1-7i$$

25) $(2i)(5+3i) - 6+5i$

$$10i + 6i^2 - 6 + 5i$$

$$-12 + 15i$$

26.) $(3-4i)^2 = (3-4i)(3-4i)$

$$9 - 12i - 12i + 16i^2$$

$$-7 - 24i$$

27) $3i^{102}$

$= -1$