PRACTICE **1-5** NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 [SHOW YOUR WORK]

Multiply using polynomial identities

$$169x^{2}+64$$

$$16x^{2}+4$$

$$36x^{2}+84x+49$$

$$x^{3}-1331y^{3}$$

$$27x^{3}+8$$

$$x^{3}+15x^{2}+75x+125$$

$$x^{3}-15x^{2}+75x-125$$

$$16x^{2}-9$$

$$9x^{2}-24xy+16y^{2}$$

$$x^{2}+5x-24$$

1. $\left(x+8\right)\left(x-3\right)$
2. $\left(3x-4y\right)^{2}$
3. $\left(4x-3\right)\left(4x+3\right)$
4. $\left(x-5\right)^{3}$
5. $\left(x+5\right)^{3}$
6. $\left(3x+2\right)\left(9x^{2}-6x+4\right)$
7. $\left(x-11y\right)\left(x^{2}+11xy+121y^{2}\right)$
8. $\left(6x+7\right)^{2}$
9. $\left(4x-2i\right)\left(4x+2i\right)$
10. $\left(13x-8i\right)\left(13x+8i\right)$

Factor the expressions using the polynomial Identities

$$\left(9x-y\right)^{2}$$

$$\left(x+y\right)^{3}$$

$$\left(x-5\right)^{3}$$

$$\left(4x+10y\right)\left(4x-10y\right)$$

$$\left(3x+8i\right)\left(3x-8i\right)$$

$$\left(12x-5i\right)\left(12x+5i\right)$$

$$\left(6x+5\right)^{2}$$

$$\left(x+11\right)\left(x+8\right)$$

$$\left(2x-7\right)\left(2x+7\right)$$

$$\left(3x-y\right)\left(9x^{2}+3xy+y^{2}\right)$$

1. $27x^{3}-y^{3}$
2. $4x^{2}-49$
3. $x^{2}+19x+88$
4. $36x^{2}+60x+25$
5. $144x^{2}+25$
6. $x^{3}+3x^{2}y+3xy^{2}+y^{3}$
7. $81x^{2}-18xy+y^{2}$
8. $9x^{2}+64$
9. $16x^{2}-100y^{2}$
10. $x^{3}-15x^{2}+75x-125$

Use the quadratic formula to sole each equation.

$$x=\frac{3}{5},-1$$

1. $-5x^{2}-2x+3=0$

$$x=-\frac{1}{3},-2$$

1. $3x^{2}+7x+2=0$

$$x=-\frac{1}{4},1$$

$$x=-5\pm \sqrt{14}$$

1. $x^{2}+10x+11=0$
2. $-4x^{2}+3x+1=0$

Factor each expression over the complex numbers.

$$\left(x+2i\sqrt{2}\right)\left(x-2i\sqrt{2}\right)$$

$$\left(x+2\right)\left(x+3\right)(x+2i)(x-2i)$$

$$\left(x-4\right)\left(x+2+2i\sqrt{3}\right)(x+2-2i\sqrt{3})$$

$$\left(x+i\sqrt{6}\right)\left(x-i\sqrt{6}\right)$$

$$\left(x+4+i\right)\left(x+4-1\right)$$

$$\left(x-2+i\right)\left(x-2-i\right)$$

1. $x^{2}-4x+5$
2. $x^{2}+8x+17$
3. $x^{2}+6$
4. $x^{3}-64$
5. $\left(x^{2}+5x+6\right)\left(x^{2}+4\right)$
6. $x^{2}+8$