

Spiral Review:

Complete the square.

$$1. x^2 - 7x + \frac{49}{4}$$
$$\frac{-7}{2} * \quad (x - \frac{7}{2})^2$$
$$(\frac{-7}{2})^2 = \frac{49}{4}$$

$$2. 5x^2 - 10x$$
$$5(x^2 - 2x + 1)$$
$$\frac{-2}{2} = -1 * \quad 5(x-1)^2$$
$$(-1)^2 = 1$$

Simplify.

$$3. \frac{2}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{2\sqrt{5}}{\sqrt{5 \cdot 5}} = \frac{2\sqrt{5}}{5}$$

$$4. \frac{1}{(2-\sqrt{3})(2+\sqrt{3})} = \frac{2+\sqrt{3}}{4 + 2\sqrt{3} - 2\sqrt{3} - 3}$$
$$\frac{2+\sqrt{3}}{1}$$

p.128 2.4 Complex Numbers

Imaginary Unit- "i", $i = \sqrt{-1}$

$$\sqrt{-36} = \sqrt{-1 \cdot 36} = \sqrt{-1} \cdot \sqrt{36}$$
$$6i$$

$$1 | i = i$$
$$2 | i^2 = (\sqrt{-1})^2 = -1$$
$$3 | i^3 = -i$$
$$0 | i^4 = 1$$

$$i^{250} = -1$$

When adding real numbers and real multiples to the imaginary unit, complex numbers are formed.

$a+bi$ is a complex number written in standard form.

a is known as the real part, bi is known as the imaginary part.

Students will be able to perform operations (+, -, *) of complex numbers and write the answer in standard form.

Example 1: Perform the operations and write the result in standard form.

a.) $(17 - 3i) - (-4 + 9i)$
 $(17 + 4) + (-3i - 9i)$
 $21 - 12i$

b.) $(5 + 2i) + (13 + 10i)$
 $5 + 2i + 13 + 10i$
 $18 + 12i$

$\frac{56}{24}i + \frac{3}{24}i$

c.) $25 + (-6 + 8i) - 4i$
 $25 - 6 + 8i - 4i$
 $19 + 4i$

d.) $\left(\frac{3}{5} + \frac{7}{3}i\right) + \left(\frac{5}{8} - \frac{1}{8}i\right)$
 $\frac{24}{40} + \frac{7}{3}i - \frac{5}{8} + \frac{1}{8}i$
 $\frac{-1}{40} + \frac{59}{24}i$

Students will be able to perform operations (+, -, *) of complex numbers and write the answer in standard form.

e.) $-4(6 - 2i)$

$-24 + 8i$

f.) $-8(5 - 3i)$

g.) $(\sqrt{2} + \sqrt{13}i)(\sqrt{2} - \sqrt{13}i)$

$2 - \sqrt{2}\sqrt{13}i + \sqrt{2}\sqrt{13}i - 13i^2$
 $2 - 13i^2$
 $2 - 13(-1) = 2 + 13$
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h.) $(3 - 6i)^2$
 $(3 - 6i)(3 - 6i)$
 $9 - 18i - 18i + 36i^2$
 $9 - 36i - 36$
 $-27 - 36i$

Students will be able to write the quotient in standard form.

Example 2: Write the quotient in standard form.

a.) $\frac{3}{8i} \cdot \frac{i}{i}$

$$\frac{3i}{8i^2} = \frac{3i}{-8}$$
$$= -\frac{3i}{8}$$

b.) $\frac{2}{6-7i}$

c.) $\frac{(4-i)(9-6i)}{(9+6i)(9-6i)}$

$$\frac{36 - 9i - 24i + 6i^2}{81 - 54i - 54i - 36i^2}$$
$$\frac{36 - 6 - 9i - 24i}{81 + 36}$$
$$\frac{30 - 33i}{117} = \frac{10 - 11i}{39}$$

d.) $\frac{2i}{(5+3i)^2}$

Turn-in:

p.133 (30), 34, 52, (56)

HW Assignment:

p.133 (21-41, 51-57 odds)