1. Find ALL EXACT COMPLEX solutions.

a) $4x^5 + 52x^3 + 144x = 0$

b) $3(x - 6)^2 + 43 = 7$

Simplify each.

2. $(5 - 3\sqrt{-16}) - (6 + 2\sqrt{-49})$
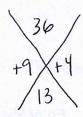
3. $|4 - 6i|$

1. Find ALL EXACT COMPLEX solutions.

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ANSWERS

$$4x(x^4 + 13x^2 + 36) = 0$$

b)
$$-43 \quad -43$$
$$\frac{3(x-6)^2}{3} = \frac{-36}{3}$$
$$\sqrt{(x-6)^2} = \sqrt{-12} = \sqrt{-1 \cdot 4 \cdot 3}$$
$$x - 6 = \pm 2i\sqrt{3}$$
$$+6 \qquad +6$$
$$\boxed{x = 6 \pm 2i\sqrt{3}}$$

$$36$$
$$+9 \quad +4$$
$$13$$

$$4x(x^2+9)(x^2+4) = 0$$

$$4x = 0 \qquad x^2 + 9 = 0 \qquad x^2 + 4 = 0$$
$$x = 0 \qquad \sqrt{x^2} = \sqrt{-9} \qquad \sqrt{x^2} = \sqrt{-4}$$

$$\boxed{x = 0, \pm 3i, \pm 2i}$$

Simplify each.

2. $(5 - 3\sqrt{-16}) - (6 + 2\sqrt{-49})$

$$= (5 - 3 \cdot 4i) - (6 + 2 \cdot 7i)$$
$$= (5 - 12i) - (6 + 14i)$$
$$= \boxed{-1 - 26i}$$

3. $|4 - 6i| = \sqrt{4^2 + 6^2}$

$$= \sqrt{16 + 36}$$
$$= \sqrt{52}$$
$$= \sqrt{4 \cdot 13}$$
$$= \boxed{2\sqrt{13}}$$

Imaginary axis

4

4

Real axis

x

6

-6i

1