**2-5.32** Using $|z| = \sqrt{z\bar{z}}$, we have

$$|(2-3i)^4| = \sqrt{(2-3i)^4(2+3i)^4} = \sqrt{[(2-3i)(2+3i)]^4}$$
$$= \sqrt{(2^2+3^2)^4} = \sqrt{13^4} = 13^2 = 169.$$

**2-5.43.**

Given $(x+iy)^2 = 2ix$, we multiply out the left side to get

$$x^2 - y^2 + 2ixy = 2ix = 0 + 2ix.$$

Equating real terms and equating imaginary terms gives

$$x^2 - y^2 = 0 \qquad \text{and} \qquad 2xy = 2x.$$

The second equation is true if $x = 0$ or if $y = 1$. If $x = 0$, then $y = 0$ by the first equation. If $y = 1$, then $x = \pm 1$ from the first equation. Thus there are three points satisfying the given equation: $(x,y) = (0,0)$ or $(1,1)$ or $(-1,1)$.