

$$(2i)(3i) = 6i^2 = 6(-1) = -6$$

$$x^2 + 20 = 0$$

$$x^2 = -20$$

$$x = \pm \sqrt{-20}$$

$$x = \pm \sqrt{20} i$$

Quadratic Equations with Complex Roots

$$x^2 + 6x + 30 = 0$$

$$x^2 + 6x + (3)^2 = -30 + 9$$

$$(x+3)^2 = -21$$

$$x+3 = \pm \sqrt{21} i$$

$$x = -3 \pm \sqrt{21} i$$

$$x^2 + 6x + 30 = 0$$

$$a = 1$$

$$b = 6$$

$$c = 30$$

$$x = \frac{-6 \pm \sqrt{(6)^2 - 4(1)(30)}}{2(1)}$$

$$= \frac{-6 \pm \sqrt{36 - 120}}{2}$$

$$x = \frac{-6 \pm \sqrt{-84}}{2}$$

$$x = \frac{-6 \pm \sqrt{84} i}{2}$$

To re-emphasize powers of i

First (-1)

$$(-1)^1 = -1$$

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

$$(-1)^3 = -1$$

$$(-1)^4 = 1$$

$$i = i$$

$$i^2 = -1$$

$$i^3 = i^2 \cdot i = (-1) i = -i$$

$$i^4 = i^2 \cdot i^2 = (-1)(-1) = 1$$

$$i^5 = i^4 \cdot i = (1)i = i$$

$$i^6 = i^4 \cdot i^2 = -1$$

$$i^7 = i^4 \cdot i^3 = -i$$

$$i^8 = i^4 \cdot i^4 = 1$$

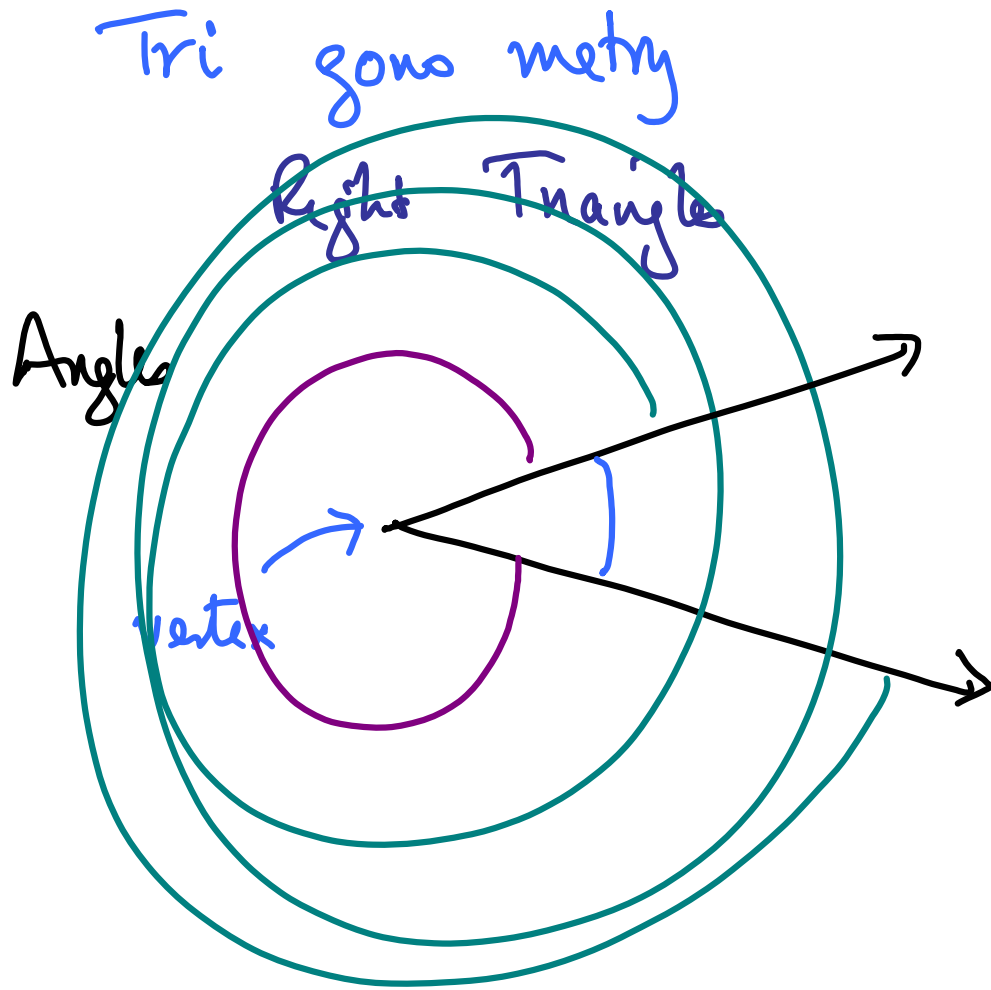
$$i^{47} = (i^4)^{11} \cdot i^3 = -i$$

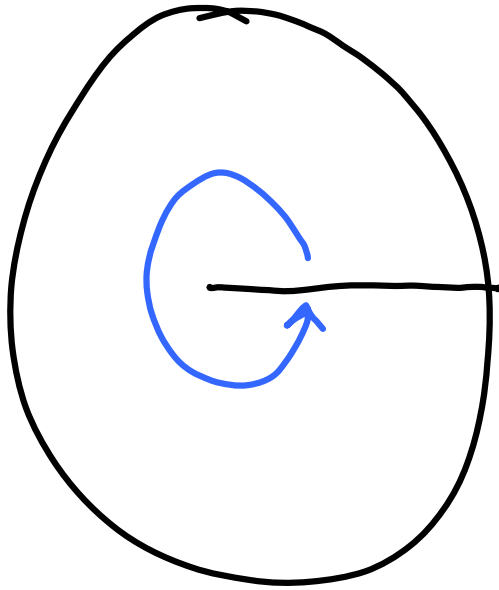
$$i^{60} = (i^4)^{15} = (1)^{15} = 1$$

$$i^{37} = i^1 = i$$

$$i^{122} = i^2 = -1$$

Trigonometry





degrees

360°