

## 5.4 – SOLVING QUADRATIC EQUATIONS W/ IMAGINARY SOLUTIONS

### OBJECTIVES:

- 1) Solve a quadratic with imaginary solutions.
- 2) Simplify powers of  $i$ .

Use the most efficient method for solving the quadratic equation below.

1)  $3x^2 + 6x + 4 = 0$

2)  $3x^2 + 21 = -60$

### SIMPLIFYING POWERS OF $i$

$$i = \sqrt{-1}$$

$$i^2 =$$

$$i^3 =$$

$$i^4 =$$

### YOU TRY!

a)  $i^{53} =$

b)  $i^{2002} =$

c)  $i^{39} = (i^2)^{19} i = (-1)^{19} i = \boxed{-i}$

d)  $i^{48} = (i^2)^{24} = (-1)^{24} = \boxed{1}$

e)  $i^{103} = (i^2)^{51} i = (-1)^{51} i = \boxed{-i}$

f)  $i^{106} = (i^2)^{53} = (-1)^{53} = \boxed{-1}$