

QUESTION 1

- a) 1) 40 percent with 8 cores

$$\text{Speedup} = 1 / (0.6 + (1 - (100 - 40) / 100) / 8)$$

$$\text{Speedup} = 1.53$$

- 2) 40 percent 16 cores

$$\text{Speedup} = 1 / [(1 - 0.4) + (0.4 / 16)]$$

$$\text{Speedup} = 1 / 0.625 = 1.6$$

- b) 1) 67 percent with 2 cores

$$\text{Speedup} = 1 / (0.33 + (1 - (100 - 67) / 100) / 2)$$

$$\text{Speedup} = 1.5$$

- 2) 67 percent with 4 cores

$$\text{Speedup} = 1 / (0.33 + (1 - 0.33) / 4)$$

$$\text{Speedup} = 2.01$$

- c) 1) 90 percent with 4 cores

$$\text{Speedup} = 1 / (0.1 + (1 - (100 - 90) / 100) / 4)$$

$$\text{Speedup} = 3.08$$

- 2) 90 percent with 8 cores

$$\text{Speedup} = 1 / (0.1 + (1 - (100 - 90) / 100) / 8)$$

$$\text{Speedup} = 4.7$$