

Write out the quadratic formula for the roots (x-intercepts) of the equation: $ax^2+bx+c = 0$.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- 1) The city of Penton has a current population of 150,000 that is doubling every 20 years. What will the population be 95 yrs from now?

$$f(t) = 150,000 (2)^{\frac{t}{20}}$$

$$f(95) = 150,000 (2)^{\frac{95}{20}}$$

$$f(95) = 4,036,303$$

- 2) You wish to deposit \$2500 in a local bank that gives the best rate of return on your money. Bank A offers 3 % interest compounded twice a year and Bank B offers 2.5 % compounded continuously.

(a) After one year, which bank would be the better choice in which to deposit your money?

Bank A: $A = 2500 \left(1 + \frac{0.03}{2}\right)^{2(1)}$

Bank B: $A = 2500 e^{(0.025)(1)}$

Best! $A = \$2575.56$

$$A = \$2563.29$$

(b) Would leaving your deposit in for 10 years make a difference?

Bank A: $A = 2500 \left(1 + \frac{0.03}{2}\right)^{2(10)}$

Bank B: $A = 2500 e^{(0.025)(10)}$

$$A = \$3367.40$$

$$A = \$3210.06$$

No Difference!

- 3) My 1995 Intrepid ES has depreciated over the last 16 years according to the following Kelley Blue Book Values.

a) Find an exponential equation to fit the data.

$$y = 24220 (0.88)^x$$

(a) (b)

Years	Value (\$)
1	20500
4	14452
8	9068
12	5690
16	2900

b) What will be the value of my car 7 years from now?

$$\$1283.58$$