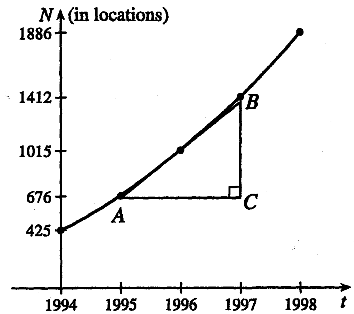
24. (a) (i) [1996, 1998]: $\dfrac{N(1998) - N(1996)}{1998 - 1996} = \dfrac{1886 - 1015}{2} = \dfrac{871}{2} = 435.5$ locations/year

(ii) [1996, 1997]: $\dfrac{N(1997) - N(1996)}{1997 - 1996} = \dfrac{1412 - 1015}{1} = 397$ locations/year

(iii) [1995, 1996]: $\dfrac{N(1996) - N(1995)}{1996 - 1995} = \dfrac{1015 - 676}{1} = 339$ locations/year

(b) Using the values from (ii) and (iii), we have $\dfrac{397 + 339}{2} = \dfrac{736}{2} = 368$ locations/year.

(c) Estimating A as (1995, 660) and B as (1997, 1350), the slope at 1996 is $\dfrac{1350 - 660}{1997 - 1995} = \dfrac{690}{2} = 345$ locations/year.



25. (a) (i) $\dfrac{\Delta C}{\Delta x} = \dfrac{C(105) - C(100)}{105 - 100} = \dfrac{6601.25 - 6500}{5} = \$20.25/\text{unit}.$

(ii) $\dfrac{\Delta C}{\Delta x} = \dfrac{C(101) - C(100)}{101 - 100} = \dfrac{6520.05 - 6500}{1} = \$20.05/\text{unit}.$

(b) $\dfrac{C(100 + h) - C(100)}{h} = \dfrac{[5000 + 10(100 + h) + 0.05(100 + h)^2] - 6500}{h} = \dfrac{20h + 0.05h^2}{h}$

$= 20 + 0.05h,\ h \neq 0$

So the instantaneous rate of change is $\lim\limits_{h \to 0} \dfrac{C(100 + h) - C(100)}{h} = \lim\limits_{h \to 0} (20 + 0.05h) = \$20/\text{unit}.$