Mathematics 122 Quiz 1 Name: Key

(1) If $f(x) = x^2 + x$, compute and simplify $\dfrac{f(1+h) - f(1)}{h}$.

2pts

$$\frac{f(1+h) - f(1)}{h} = 3+h$$

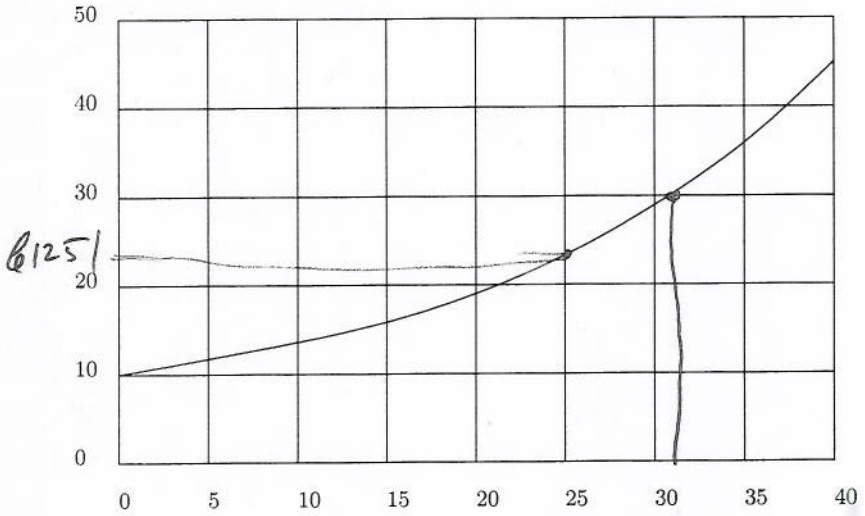
$$\frac{f(1+h) - f(1)}{h} = \frac{(1+h)^2 + (1+h) - (1^2+1)}{h}$$

$$= \frac{1+2h+h^2+1+h-1-1}{h}$$

$$= \frac{h^2+3h}{h}$$

$$= \frac{h(h+3)}{h} = h+3 = 3+h$$

(2) If $y - f(x)$ has the following graph:



1pt (a) Estimate $f(25)$.

$f(25) \approx$ 24 (22, 23, 25 all ok)

2pts (b) What, approximately, is the solution to $f(x) = 30$.

$x \approx$ 32 (31, 33, 34 all ok)