



Expand and simplify

$$(x-1)(3x-1)(x-4)$$

$$(3x^2 - 4x + 1)(x-4)$$

$$= 3x^3 - 4x^2 + x - 12x^2 + 16x - 4$$

$$3x^3 - 16x^2 + 17x - 4$$

$$f(x) = 1 + \cos x^\circ$$

Find $f(100)$

Give your answer to 3 decimal places.

$$1 + \cos 100$$

$$1 + (-0.1736\dots)$$

$$= 0.82635$$

$$g(x) = \tan x^\circ$$

Find $fg(88)$

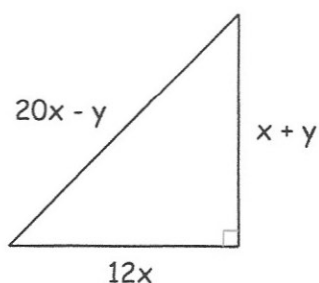
Give your answer to 3 decimal places.

$$g(88) = 28.636\dots$$

$$f(28.636\dots) = 1.8776\dots$$

$$1.878$$

Below is a right angled triangle.

Prove $x : y = 14 : 85$

$$(12x)^2 + (x+y)^2 = (20x-y)^2$$

$$144x^2 + x^2 + 2xy + y^2 = 400x^2 - 40xy + y^2$$

$$145x^2 + 2xy = 400x^2 - 40xy$$

$$42xy = 255x^2$$

$$x > 0$$

$$42y = 255x$$

$$14y = 85x$$

$$x : y = 14 : 85$$