Mathematics 172

Name: _____Key_____

You must show your work to get full credit.

1. Let $f = f(x, y)$ be so that if x is doubled, then f doubled, if x is tripled then f is tripled etc. And if y id doubled, then f is doubled, if y is tripled, then f is tripled etc. If $f(4.1, 6.7) = 8.3$

(a) Find a formula for $f(x, y)$. $f(x, y) = \underline{\quad .3021 \; xy \quad}$

$$f(x, y) = cxy$$
$$f(4.1, 6.7) = c(4.1)(6.7) = 8.3$$
$$c = \frac{8.3}{(4.1)(6.7)} = .3021$$

(b) Find $f(10.3, 15.2)$. $f(10.3, 15.2) = \underline{\quad 47.304 \quad}$

$$f(10.3, 15.2) = (.3021)(10.3)(15.2)$$
$$= 47.304$$

2. Let z be proportional to $x^2 y^3$ and assume $z = 76.1$ when $x = 1.5$ and $y = 5.2$.

(a) Find a formula for z in terms of x and y. $z = \underline{\quad .2405 \; x^2 y^3 \quad}$

$$z = c x^2 y^3$$
$$76.1 = c(1.5)^2 (5.2)^3$$
$$c = \frac{76.1}{(1.5)^2 (5.2)^3} = .2405$$

(b) What is $f(8.7, 3.1)$? $f(8.7, 3.1) = \underline{\quad 542.4 \quad}$

$$f(8.7, 3.1) = .2405 (8.7)^2 (3.1)^3$$
$$= 542.4$$