

(4/4)

ENMG 400
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(4)

a) $f_{c1} = \$1000$

b) $f_{c2} = \$5000$ Eng. & Arch. Library

c) $V_{c1}/map = \$0.9$

d) $V_{c2}/map = \$0.1$

e) 5000 maps

f) quantity of maps < 5000 , System I is recommended

g) " " " > 5000 , system II is recommended

h) for 3000 maps: $\begin{cases} M_{c1} = 0.9 \\ A_{c1} = \frac{(0.9(3) + 1)1000}{3000} = \$1.23 \end{cases}$

$\begin{cases} M_{c2} = 0.1 \\ A_{c2} = \frac{[(0.1)(3) + 5]1000}{3000} = \$1.77 \end{cases}$

(8) a) at $x = 1000$, $R(1000) = 200,000$

$R(x) = 200x$

b) Intercept of the cost line = 100,000

slope = $\frac{200,000 - 100,000}{1000} = 100$

$\Rightarrow C(x) = 100x + 100,000$

c) $X = 1000$ with

d) at $x = 1500$, we have a profit:

$$\begin{aligned} P_r(1500) &= R(1500) - C(1500) \\ &= 200(1500) - [100(1500) + 100,000] \\ &= \$50,000 \end{aligned}$$

22)

Cost Item	% of total cost
1	8
2	15
3	13
4	12
5	13
6	10
7	12
8	17

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Total cost of 2000 ft² = 150,000

a) cost / ft² = \$75

b) i) $\frac{\text{cost of 4000 ft}^2}{\text{cost of 2000 ft}^2} = \left(\frac{4000}{2000}\right)^1 = 2$

$\Rightarrow \text{cost of 4000} = 2(150,000) = \boxed{\$300,000}$

ii) Total cost = $(0.77)(300,000) + (0.23)(150,000)$
 $= \boxed{\$265,500}$

Equipment	original size	cost of original size	power sizing exponent	New equipment size	New equipment cost
V varnish bath	50 gal	\$3500	0.8	75 gal	\$484
power sander	3/4 hp	\$250	0.22	1.5 hp	\$291
paint bath	3 ft ³	\$3000	0.6	12 ft ³	\$688
Sum		\$6750			\$12,012

$$\frac{\text{Cost of new varnish bath}}{\text{cost of old varnish bath}} = \left(\frac{\text{size of new}}{\text{size of old}}\right)^{0.8} = (1.5)^{0.8}$$

$$\Rightarrow \text{cost} = 3500 (1.5)^{0.8} = \$4841$$

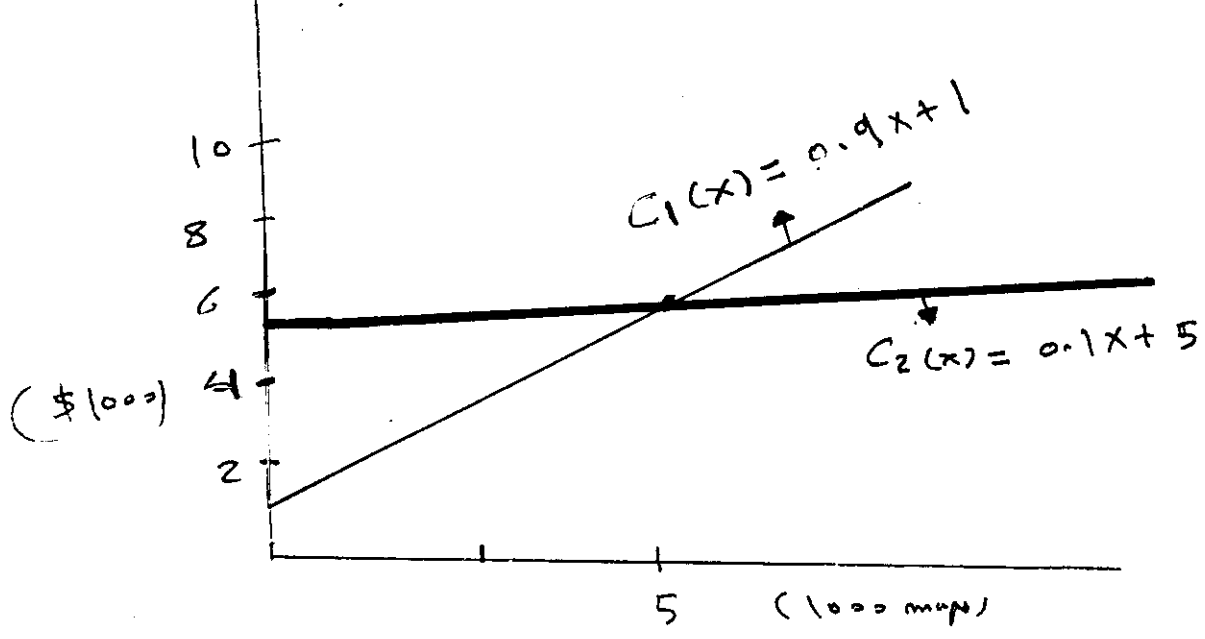
$$\frac{\text{Cost of new power sander}}{\text{cost of old}} = \left(\frac{1.5}{0.75}\right)^{0.22} = 2$$

$$\Rightarrow \text{cost} = 250 (2)^{0.22} = \$291$$

$$\frac{\text{Cost of new paint bath}}{\text{cost of old}} = \left(\frac{12}{3}\right)^{0.6} = 4$$

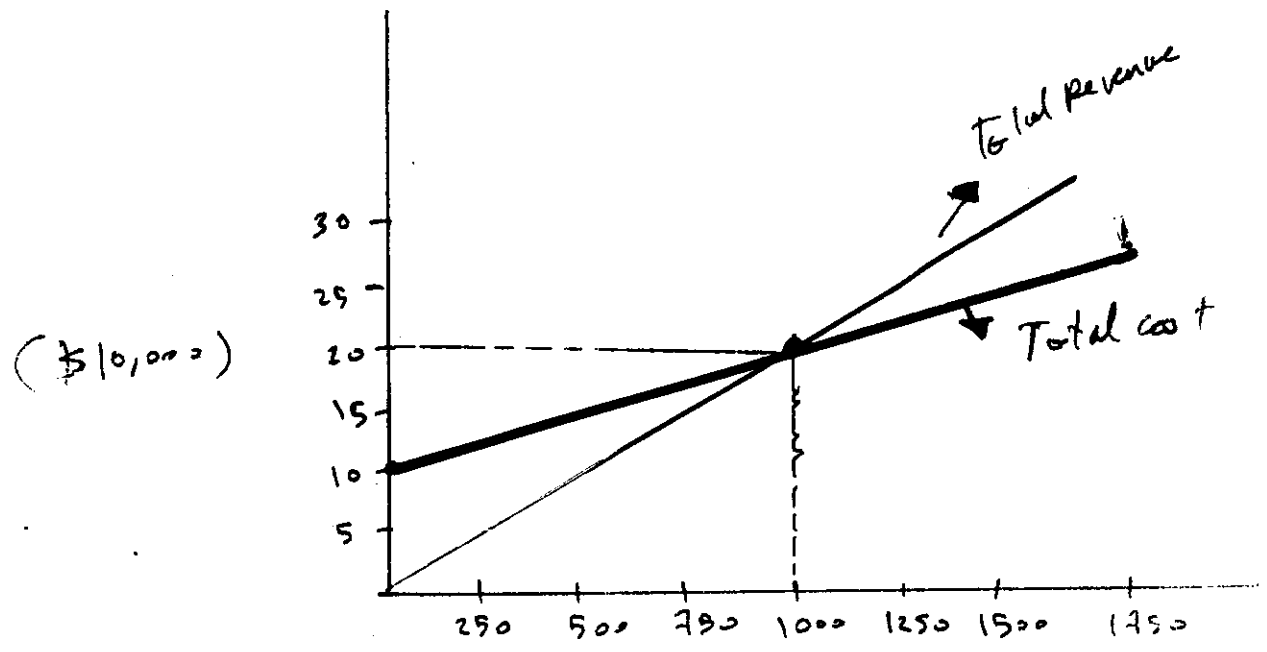
$$\Rightarrow \text{cost} = 3000 (4)^{0.6} = \$6880$$

$$\begin{aligned} \text{Net cost} &= \text{New cost} - 0.15(\text{old cost}) \\ &= 12,012 - 0.15(6750) \\ &= \boxed{\$11,000} \end{aligned}$$



EX 4 | Chapter 2

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EX 8