ECON 2080, part 1
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Quiz 6: Elasticities

Question A

Let $c(x) = a(x) \times b(x)/d(x)$.Let ϵ_x^a, ϵ_x^b, ϵ_x^c, and ϵ_x^d be the elasticities of the functions a, b, c, and d with respect to x. Then

1. $\epsilon_x^c = \epsilon_x^a \times \frac{\epsilon_x^b}{\epsilon_x^d}$
2. $\epsilon_x^c = \frac{a(x)}{d(x)}\epsilon_x^a + \frac{b(x)}{d(x)}\epsilon_x^b$
3. $\epsilon_x^c = \ln(a(x)) + \ln(b(x)) - \ln(d(x))$
4. $\epsilon_x^c = \epsilon_x^a + \epsilon_x^b - \epsilon_x^d$
5. None of the above

Question B

Let $f(x, y)$ be a function of x and y. Let $\partial f/\partial x$ and $\partial f/\partial y$ be the partial derivatives of the function f with respect to x and y. Let $\epsilon_x^f = \partial \ln(f)/\partial \ln(x)$ and $\epsilon_y^f = \partial \ln(f)/\partial \ln(y)$ be the partial elasticities of the function f with respect to x and y. Then the infinitesimal change in f generated by infinitesimal changes in x and y satisfies

1. $df = \epsilon_x^f \cdot dx + \epsilon_y^f \cdot dy$
2. $d\ln f = \epsilon_x^f \cdot dx + \epsilon_y^f \cdot dy$
3. $d\ln f = [\partial f/\partial x]dx + [\partial f/\partial y]dy$
4. $df = \epsilon_x^f \cdot d\ln x + \epsilon_y^f \cdot d\ln y$
5. $d\ln f = \epsilon_x^f \cdot d\ln x + \epsilon_y^f \cdot d\ln y$
6. None of the above

Question C

Let $c(x) = [b \cdot a(x)]^d$, where $a(x) > 0$ and $b > 0$ and $d < 0$. Let ϵ_x^c and ϵ_x^a be the elasticities of the functions c and a with respect to x. Then

1. $\epsilon_x^c = [b \cdot \epsilon_x^a]^d$
2. $\epsilon_x^c = d \cdot [\epsilon_x^a + b]$
3. $\epsilon_x^c = [b + d] \cdot \epsilon_x^a$
4. $\epsilon_x^c = d \cdot \epsilon_x^a$
5. $\epsilon_x^c = b \cdot \epsilon_x^a$
6. $\epsilon_x^c = d \cdot [b \cdot a(x)]^{d-1}$
7. None of the above

Question D

Let $c(x) = a(x) + b$, where $a(x) > 0$ and $b > 0$. Let ϵ_x^c and ϵ_x^a be the elasticities of the functions c and a with respect to x. Then

1. $\epsilon_x^c = \epsilon_x^a$
2. $\epsilon_x^c = \epsilon_x^a + b$
3. $\epsilon_x^c = \frac{a(x)}{c(x)} \epsilon_x^a$
4. $\epsilon_x^c = \frac{b}{c(x)} \epsilon_x^a$
5. $\epsilon_x^c = \frac{a(x)}{b} \epsilon_x^a$
6. $\epsilon_x^c = \frac{a(x)}{c(x)} \epsilon_x^a + \frac{b}{c(x)}$
7. None of the above