

31. Correct. The answer is true. Price elasticity is

$$\frac{dQ}{dP} \frac{P}{Q}$$

$$Q = \exp(a - bP)$$

$$\frac{dQ}{dP} \frac{P}{Q} = \frac{d \exp(a - bP)}{dP} \frac{P}{Q} = \frac{\exp(a - bP)(-b)}{\exp(a - bP)} \frac{P}{Q} = -b \frac{P}{Q}$$

Alternatively, if the demand equation is $Q = a - b \ln(P)$, then

$$\frac{dQ}{dP} \frac{P}{Q} = \frac{d(a - b \ln P)}{dP} \frac{P}{Q} = \frac{-b}{P} \frac{P}{Q} = \frac{-b}{Q}$$

Can you come up with the price elasticities for these more complicated functions:

$$\ln(Q) = a - b \ln P + c \ln P^2$$

$$\ln(Q) = a - b \ln P + c \ln P^2 + d \ln Y$$

$$Q = a + bP + cY + dPY$$