1. Which of the following is the negation of the open statement $\forall x\,[p(x) \wedge \neg q(x)]$? *(3 points)*

A. $\forall x\,[\neg p(x) \vee q(x)]$

✓ B. $\exists x\,[\neg p(x) \vee q(x)]$

C. $\exists x\,[\neg p(x) \wedge q(x)]$

D. $\exists x\,[p(x) \vee \neg q(x)]$

2. Let p(x,y) denote the open statement "x divides y" where the universe for x and y is all positive integers and "divides" means "divides evenly". Which of the following statements is **false**?
(3 points)

A. $p(3,27)$

B. $\forall x\, p(x,0)$

C. $\forall y\, p(1,y)$

✓ D. $\forall x \forall y\, p(x,y)$

3. Suppose you have the following open statements: p(x): x^2-8x+15=(x-3)(x-5)=0 and q(x): x is odd. Which of the following statements is **false**? *(3 points)*

A. $\exists x\,[q(x) \rightarrow p(x)]$

B. $\exists x\,[p(x) \rightarrow q(x)]$

✓ C. $\forall x\,[q(x) \rightarrow p(x)]$

D. $\forall x\,[\neg q(x) \rightarrow \neg p(x)]$