第一讲巩固练习

奇偶数相关：

1. If x is an integer, and $3x^2$ is even, then which of the following must be true?

(A) $x + 3$ is even ✗
(B) $x^2 - 1$ is even ✗
(C) $x + 4$ is even ✓
(D) $\frac{x}{2}$ is even ? could be 2
(E) $\frac{x}{2}$ is odd ? what if 4

$3x^2$ is even
x^2 must be ~~odd~~ even
x must be even

2. If $-x/7$ is even, then which of the following must be true?

(A) x is odd
(B) x is even
(C) x is negative
(D) x is positive
(E) x is a prime number

$-\frac{x}{7}$ even
$x \neq 7$ only
~~14~~ ~~odd~~ even
~~25~~

For Questions 3 to 6, indicate all of the answer choices that apply.

3. If x and y are integers, and $x^2 - y^2$ is even, then which of the following must be true?

[A] $x - y$ is even ✓
[B] $x + y$ is even ✓
[C] $(x + y)^2$ is even ✓
[D] xy is even ✗
[E] $\frac{x}{y}$ is even ✗ 相同
[F] $x^2 - xy$ is even

odd - ~~even~~ odd = even
even - even = even

$x^2 - y^2$ even

~~2 - 5 = 2~~
odd - odd = even
even - even = even
even - odd = odd

4. If x is an even integer, then which of the following must be true?

[A] $x^2 + 2$ is even ✓
[B] $\frac{x}{2}$ is even ✗
[C] $\frac{4}{x}$ is even ✗
[D] x^7 is even ✓
[E] x^2 is a multiple of 4 ✓

x even
even

4 16 36 64
2 4 6

5. If x and y are both integers and $x(y+3)$ is odd, then which of the following must be true?

A x is even
B y is even
C xy is odd
D xy is even
E x is odd
F y is odd

$x(y+3)$ odd
x odd, $y+3$ odd
$\therefore y+3$ is odd
$\therefore y$ is even

6. If a, b, and c are positive integers, $a+b=12$, and $bc=15$, then which of the following must be true?

A $b+c$ is even
B ab is even
C ac is odd
D $a-c$ is even
E abc is odd

$bc=15$
odd odd
odd · odd

正负整数相关：

1. If $a<b<0$, then which of the following must be true?

A $ab<0$
B $a+b>0$
C $\frac{a}{b}<0$
D $b-a>0$
E $a-b>0$

b : -5, -3
b : $-3+5$
$-5+3$

2. If $xy>0$ and $yz<0$, then which of the following must be negative?

A xyz
B xy^2z
C x^2y^2z
D $x^2y^2z^2$
E $\frac{xy}{z}$

$xy>0$
$yz<0$
if $y=-$ $x=-$, $z=+$
$y^2=+$ $x=-$, $z=+=-$
if $y=+$, $y^2=+$ $x=+$ $z=-$

2选

C if $y=-$, $x=-$
$y^2=+$, $x^2=+$, $z=+$

3. If $ab^2 > 0$ and $ac < 0$, then which of the following must be true? (Indicate all the apply.)

$ab^2 > 0$ $a = +$ $b = +$ or $-$
$ac < 0$ $c = -$

A $ab > 0$ X $a+$ $b-$
B $b > 0$ b combo $-$
C $\frac{a}{c} < 0$
D $b^2c < 0$
E $a(c^2) > 0$

If $0 > x > y$, then which of the following must be true? (Indicate all that apply.)

$9 - 25$

A $x^2 - y^2 < 0$
B $y - x < 0$ $9 - 5$
C $\frac{1}{x^2} < 1$
D $\frac{x+y}{x} > 0$ $\frac{x+y}{x} = \frac{3+5}{3} =$
E $y^2 - x^2 < 0$

$25 - 9 =$
$25 - 9 =$
$x = 3$ $y = 5$

5. If $\frac{x-a}{z^2+1} > 0$, then which of the following must be true?

$x - a > 0$
$\frac{}{> 0}$

$z^2 = +$
$x - a > 0$
$\begin{cases} a < x < 0 \\ x > a > 0 \end{cases}$
$x > 0 > a$

A $x > 0$
B $x < a$
C $x > a$
D $xa > 0$
E $x + a > 0$

6. If $xy > 0$ and $x + y > 0$, then which of the following must be true? (Indicate all that apply.)

$+ +$
$- -$
$xy > 0$

$x + y > 0$

$- - \not> 0$
$+ + > 0$

A $x < 0$
B $|x| > |y|$
C $x > 0$
D $\frac{x}{y} > 0$
E $y > 0$

7. $0 > a > b$

QUANTITY A	QUANTITY B	
a^2	b^4	(A) (B) (C) (D)

8. $|x| > |y|$

QUANTITY A	QUANTITY B	
x^2	y^2	(A) (B) (C) (D)

9. a and b do not equal zero

QUANTITY A	QUANTITY B	
$-(a^2)(b^4)$	$(-a)^2(-b)^4$	(A) (B) (C) (D)

10. $\frac{a}{b} = 4$

QUANTITY A	QUANTITY B	
a	b	(A) (B) (C) (D)

11. $\frac{a}{b} > 0$

QUANTITY A	QUANTITY B	
ab	0	(A) (B) (C) (D)

12. $p^2q^3 > 0$
$p^3q^2 > 0$

QUANTITY A	QUANTITY B	
pq	0	(A) (B) (C) (D)

13. $a^2b^3c^5 > 0$
$a^3b^4c^5 < 0$

QUANTITY A	QUANTITY B	
ab	0	(A) (B) (C) (D)