

SUNY COLLEGE PLACEMENT PART 2 SOLUTIONS

17. $f(x) = x^2 + 4$ $g(x) = 5x - 1$

$f(g(3)) =$ $g(3) = 5(3) - 1 = 14$

← $f(14) = (14)^2 + 4 = 200$ [e]
 WORK RIGHT TO LEFT

18. $x > 0$ $y > 0$
 positive

$$\sqrt{27\sqrt{81x^8y^6}}$$

$$= \sqrt{27(9x^4y^3)}$$

$$= \sqrt{243x^4y^3}$$

$$= \sqrt{81\sqrt{3}x^2\sqrt{y^2}\sqrt{y}}$$

$$= 9\sqrt{3}x \cdot y\sqrt{y}$$

$$\boxed{= 9x^2y\sqrt{3y}} \text{ [e]}$$

WORK INSIDE-OUT

$$\sqrt{81} = 9 \quad \sqrt{x^8} = x^4$$

$$\sqrt{y^6} = y^3$$

$$\sqrt{243} \quad \sqrt{x^4} \quad \sqrt{y^3}$$

$$\sqrt{81}\sqrt{3} = 9\sqrt{3} \quad = x^2 \quad = \sqrt{y^2} \cdot \sqrt{y}$$

$$= y\sqrt{y}$$

$$\sqrt{3} \cdot y\sqrt{y} = \sqrt{3y}$$

19. $x^4 - 256$ ← DIFF OF TWO
 ↓ PERFECT SQUARES

$$= (x^2 + 16)(x^2 - 16)$$

$$= (x^2 + 16)(x + 4)(x - 4) \text{ [e]}$$

20. $-2(x + 3y = 1)$

$$\begin{array}{r} 2x - 6y = 2 \\ \hline -2x - 6y = -2 \\ \hline -12y = 0 \\ y = 0 \end{array}$$

opposites
 $\boxed{2x \quad -2x}$
 or
 $-6y \quad 6y$

$$x + 3(0) = 1$$

$$x = 1$$

21. $x - 5 - \sqrt{16x} = 0$

$x - 5 = \sqrt{16x}$
 $(x - 5)^2 = (\sqrt{16x})^2$

$x^2 - 10x + 25 = 16x$

$x^2 - 26x + 25 = 0$

$(x - 1)(x - 25) = 0$

$x - 1 = 0$ $x - 25 = 0$
 $x = 1$ $x = 25$

$x - 5 - \sqrt{16x} = 0$

$1 - 5 - \sqrt{16(1)} = 0$

$-8 \neq 0$

$x = 1$

↑
EXTRANEAS

$x - 5 - \sqrt{16x} = 0$

$25 - 5 - \sqrt{16(25)} = 0$

$20 - 5 - 20 = 0$

$0 = 0 \checkmark$

$x = 25$ [A]

22. $(x + k)^2 = k^2 + 2x + x^2$

$x^2 + 2xk + k^2 = k^2 + 2x + x^2$
 $\begin{matrix} -x^2 & & -k^2 & & -x^2 \\ 2xk & = & 2x & & \end{matrix}$

$k = \frac{2x}{2x} = 1$ [D]

23. $(3, -4)$ $(-2, 6)$

Pyth Theorem

$d^2 = (\Delta y)^2 + (\Delta x)^2$

$d^2 = (y - y_1)^2 + (x - x_1)^2$

$d^2 = (6 - (-4))^2 + (-2 - 3)^2$

$d^2 = (10)^2 + (-5)^2$

$d^2 = 125$

$d = \sqrt{125}$ [C]

24.

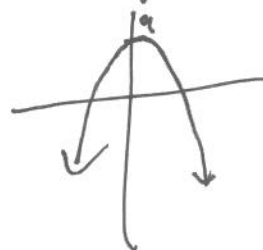
$x^2 + y = 9$

$y = -x^2 + 9$ ← y-intercept

a = negative #

↙ "frown"
 DOWNWARD
 FACING
 PARABOLA
 "CONCAVE DOWN"

option [C]



25. $y = 1 - 4x$

$y = -4x + 1 \leftarrow y = mx + b$

$m = -4$ $b = 1$

$\frac{\text{Rise}}{\text{Run}} = \frac{-4}{1}$ \uparrow y -intercept

Option A

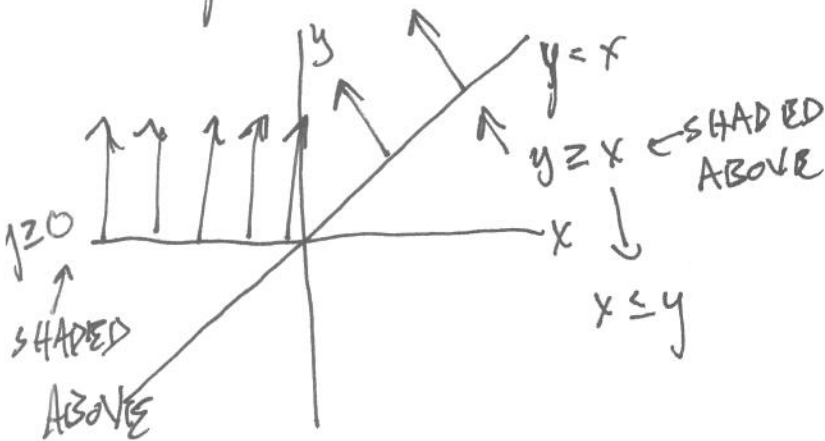
ELIMINATE

\rightarrow C & E HAVE POSITIVE SLOPE

\rightarrow B HAS y -INT OF -1

\rightarrow D HAS SLOPE OF $-\frac{1}{4}$
 $m = -\frac{1}{4}$

26. $y = x \leftarrow$ SOLID LINE



B