

Review for Exam 2 SPRING 2009; ANSWERS/SOLUTIONS

1. $y + 3 = -\frac{5}{3}(x - 2)$

2. Slope of original line is 4, so slope of perpendicular line is $-\frac{1}{4}$. Thus the equation of the perpendicular line is $y - 2 = -\frac{1}{4}(x - 5)$.

3. Perimeter = $P(x) = \text{distance around} = 2(2x) + 2(5x-1) = 4x + 10x - 2 = 14x - 2 = 26$.
Solve for x ; $x = 2$. So the sides are 4 and 9 and so the longest is 9.

4. $f(x) = -\frac{1}{2}x^2 - 5x + 2$; so $a = -1/2, b = -5$. Then $h = \frac{-b}{2a} = \frac{-(-5)}{2(-\frac{1}{2})} = -5$ and $k = f(5) = 14.5$.

5. $s(t) = -\frac{13}{2}t^2 + 88t + 6$ 6. Using the quadratic formula we have $x = \frac{8 \pm \sqrt{120}}{4} = 2 \pm \sqrt{\frac{15}{2}}$.

7. Using the discriminant we get the value zero, so there is one and its value is 0.7.

8. $5x - 2y = -16$ $2x - 3y = -2$ $4x - 8y = 3$
 $x + 4y = -1$ $-8x + 12y = 8$ $-x + 2y = 0$ Solutions: $(-3, 1/2)$, infinitely many, none.

9. To find the maximum height find the vertex which is $h = 32, k = 8242$; so the max. height is 8242 ft. The initial height is 50ft; set $x = 0$ and solve for s .

10. From the data displayed the vertex appears to be at $(4, 700)$, so the equation is $f(x) = a(x-4)^2 + 700$. To find a note that there is a point at $(2, 500)$ that will be on the graph. Set $x = 2$, and $f(2) = 500$ and solve for a ; we get $a = -50$. So the equation is $f(x) = -50(x-4)^2 + 700$. (This is one answer.)

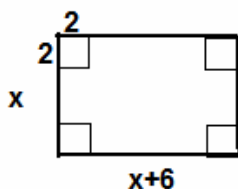
11. The minimum cost per pupil will be the y -coordinate of the vertex.; $h = 50$, then $k = 400$.

12. Treat the octane values as percents. Let $x =$ the amount of 87 octane added, then $15 - x$ is the amount of 93 octane added.
 $.87x + .93(15 - x) = .89(15)$. Solve for x ; we get $x = 10$. So use 10

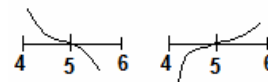
gallons of 87 octane and 5 gallons of 93 octane to get 15 gallons of 89 octane.

13. $V = 2(x-4)(x+6-4)$

14. (i) 2 (ii) Negative (iii) 3 (iv) $y = C(x+2)x(x-1)$

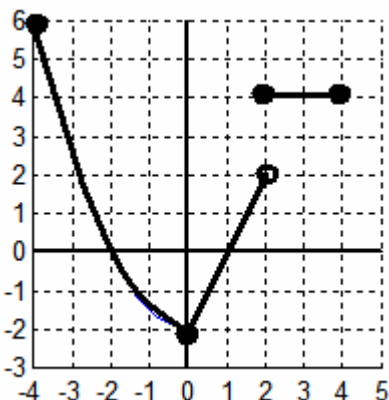


15. (a) 4 (b) rises (c) Gets flat as it crosses the x -axis at $x = 5$.
Either is possible.

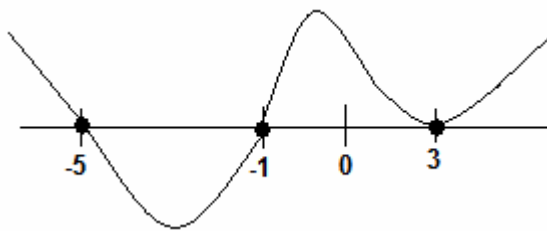


16. $K(x-6)^2(x+4)(x+1)x$

17.



18. One possible drawing. 19. (a) $\frac{1}{y^{3/4}}$ (b) $y^{3/4}$ (c) $y^{1/6}$



20. (a) If you square both sides and solve the resulting quadratic for x you get $x = 3$ or $x = 8$. However you need to check each of these. Neither is a solution.

(b) $x = 0$, or $x = -1/2$; both check.

21. About 4.2 feet.

22. #1 is $y = x^3$, #2 is $y = x^2$, #3 is $y = x$, #4 is $y = \sqrt{x}$

23. 1. F 2. T 3. T 4. T 5. F 6. T 7. T 8. F 9. T 10. T