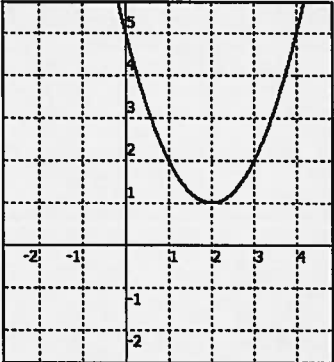
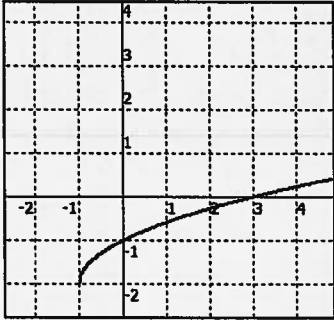
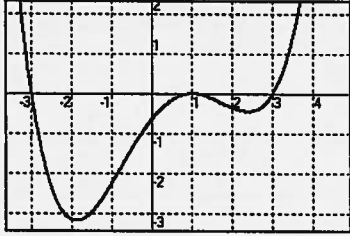


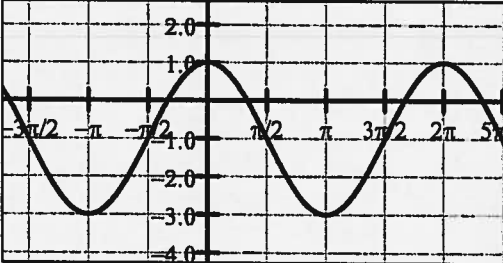
Math 1513
Review Answers

Name _____

<p>1. Solve $x^2 - 7x + 10 \geq 0$. Write your answer using interval notation.</p>	<p>1. <u>$(-\infty, 2] \cup [5, \infty)$</u></p>
<p>2. Find the distance between $(-3, 4)$ and $(2, 10)$, and the midpoint coordinates of the line segment joining the points.</p>	<p>2. distance <u>$\sqrt{61}$</u> midpoint <u>$(-\frac{1}{2}, 7)$</u></p>
<p>3. Find the equation of a circle with center at $(-3, 5)$ and radius 3.</p>	<p>3. <u>$(x+3)^2 + (y-5)^2 = 9$</u></p>
<p>4. Find the center and radius of the circle given by $x^2 - 4x + y^2 - 2y + 1 = 0$</p>	<p>4. Center <u>$(2, 1)$</u> Radius <u>2</u></p>
<p>5. Let $f(x) = 3x^2 - 1$. Find the following. a) $f(2)$ b) $f(\sqrt{5})$ c) $f(3) - f(\sqrt{2})$ d) $f(x+h)$ e) $f(x+h) - f(x)$</p>	<p>5. a) <u>11</u> b) <u>14</u> c) <u>21</u> d) <u>$3(x+h)^2 - 1 = 3x^2 + 6xh + 3h^2 - 1$</u> e) <u>$6xh + 3h^2$</u></p>
<p>6. Use the graph to find the domain and range of the function.</p> <div style="text-align: center; margin: 10px 0;"> </div>	<p>6. Domain <u>$(-\infty, 2) \cup (2, \infty)$</u> Range <u>$(-\infty, 0) \cup (0, \infty)$</u></p>

7. Find the equation of the line through $(4, 5)$ with a slope of 3.	7. <u>$y - 5 = 3(x - 4)$</u> or <u>$y = 3x - 7$</u>
8. Graph $y = (x - 2)^2 + 1$	8. 
9. Graph $y = \sqrt{x + 1} - 2$	9. 
10. Find the domain and range of $f(x) = x - 4 + 3$.	10. domain <u>$(-\infty, \infty)$</u> range <u>$[3, \infty)$</u>
11. Let $f(x) = 2x - 2$ and $g(x) = x^2 - 1$. Find $g(f(4))$.	11. <u>35</u>
12. Let $f(x) = \frac{1}{3x - 2}$ and $g(x) = x^2 - x$. Find $f \circ g$.	12. <u>$(f \circ g)(x) = \frac{1}{3x^2 - 3x - 2}$</u>
13. Let $f(x) = x^2 - x + 2$. Write a relationship for a function, g , that is f shifted right 2 units and vertically compressed by a factor of 3.	13. <u>$g(x) = \frac{1}{3}((x - 2)^2 - (x - 2) + 2)$</u> or <u>$g(x) = \frac{1}{3}(x^2 - 5x + 8)$</u>

14. Find $f^{-1}(5)$ if $f(x) = 4x - 3$.	14. <u>$f^{-1}(5) = 2$</u>
15. Determine the lowest possible degree for the polynomial whose graph is shown. 	15. <u>4</u>
16. Determine all the possibilities for rational zeros of $14x^5 - 12x^4 + 14x^2 + 4x - 4 = 0$	16. <u>$\pm 1, \pm 2, \pm 4, \pm \frac{1}{2}, \pm \frac{1}{7}, \pm \frac{2}{7}, \pm \frac{4}{7}, \pm \frac{1}{14}$</u>
17. Let $h(x) = \frac{3}{x+2} - 4$. Find any x-intercepts, y-intercepts, horizontal asymptotes, vertical asymptotes, and the domain of h .	17. x-int. <u>$-\frac{5}{4}$</u> y-int. <u>$-\frac{5}{2}$</u> horz. asypt. <u>$y = -4$</u> ver. asypt. <u>$x = -2$</u> dom(h) <u>$(-\infty, -2) \cup (-2, \infty)$</u>
18. Find the domain of $f(x) = \sqrt{x^2 + 5x - 14}$.	18. <u>$(-\infty, -7] \cup [2, \infty)$</u>
19. Find $ 3 - 4i $	19. <u>5</u>
20. Find $(2 - i)(-3 + 4i)$	20. <u>$-2 + 11i$</u>

21. Find a third degree polynomial with a zero of 2, and another zero of $3 - 2i$.	21. <u>$x^3 - 8x^2 + 25x - 26$</u>
22. Convert 140° to radian measure.	22. <u>$\frac{7\pi}{9}$</u>
23. Find the reference angle for -120° .	23. <u>60°</u>
24. Find all values of t in $[0, 2\pi]$ that satisfy $\cos(t) = \frac{\sqrt{3}}{2}$.	24. <u>$30^\circ, 330^\circ$</u> or <u>$\frac{\pi}{6}, \frac{11\pi}{6}$</u>
25. If $\sin(t) < 0$ and $\cos(t) > 0$, then t is in which quadrant?	25. <u>4</u>
26. Sketch the graph of $y = 2 \cos(x) - 1$.	
27. Find $\log_3(21)$	27. <u>2.7712</u>
28. Solve $2^{x-2} = 3$	28. <u>3.5850</u>
29. Solve $2 \ln(x) = \ln(3) + \ln(x+6)$	29. <u>6</u>
30. Find the half-life of a radioactive substance that decays by 6% in 7 years.	30. <u>78.4161 yr.</u>

<p>31. Which investment is better, one at 6.1% compounded quarterly for 8 years, or one at 5.8% compounded continuously for 8 years?</p>	<p>31. <u>6.1% compounded quarterly</u></p>
<p>32. Find the vertices, foci, and lengths of the transverse and conjugate axes for the given hyperbola. Find equations of the asymptotes.</p> $\frac{y^2}{100} - \frac{x^2}{81} = 1$	<p>32.</p> <p>Vertices: <u>$(0,10), (0,-10)$</u></p> <p>Foci: <u>$(0, \sqrt{181}), (0, -\sqrt{181})$</u></p> <p>Transverse: <u>20</u></p> <p>Conjugate: <u>18</u></p> <p>Asymptotes: <u>$y = \pm \frac{10}{9}x$</u></p>
<p>33. Find the equation for the ellipse with vertices at $(\pm 12, 0)$ and foci at $(\pm 9, 0)$.</p>	<p>33. <u>$\frac{x^2}{144} + \frac{y^2}{63} = 1$</u></p>
<p>34. The fifth term of an arithmetic sequence is 5.4 and the 12th term is 11.0. Find the nth term.</p>	<p>34. <u>$a_n = 2.2 + (n-1)(.8)$</u> or <u>$a_n = .8n + 1.4$</u></p>
<p>35. The second term of a geometric sequence is 28 and the sixth term is 7168. Find the nth term.</p>	<p>35. <u>$a_n = 7(4^{n-1})$</u></p>
<p>36. Find the sum.</p> <p>a) $\sum_{n=1}^9 (12n - 7)$ b) $\sum_{i=1}^{\infty} 4\left(\frac{1}{2}\right)^i$</p>	<p>36.</p> <p>a) <u>477</u></p> <p>b) <u>4</u></p>
<p>37. Let $\vec{u} = (2, -5)$ and $\vec{v} = (3, 2)$. Find:</p> <p>a) $\vec{u} \cdot \vec{v}$ b) $\ \vec{u}\ \cdot \ \vec{v}\$ c) The angle between \vec{u} and \vec{v}.</p> <p>d) Are \vec{u} and \vec{v} orthogonal?</p>	<p>37.</p> <p>a) <u>-4</u></p> <p>b) <u>$\sqrt{29 \cdot 13} = 19.41$</u></p> <p>c) <u>101.89°</u></p> <p>d) <u>no</u></p>