Unit 1 test review answers---SM3H

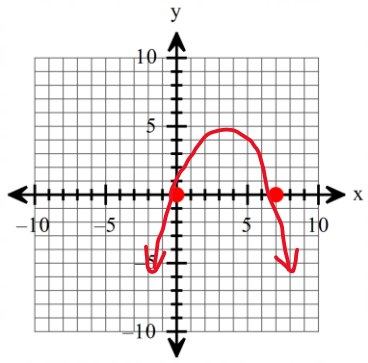
1. $\lim_{x\to-\infty} f(x) = -\infty$ $\lim_{x\to+\infty} f(x) = \infty$

2. $\lim_{x\to-\infty} f(x) = \infty$ $\lim_{x\to+\infty} f(x) = -\infty$

3. $\lim_{x\to-\infty} f(x) = \infty$ $\lim_{x\to+\infty} f(x) = -\infty$

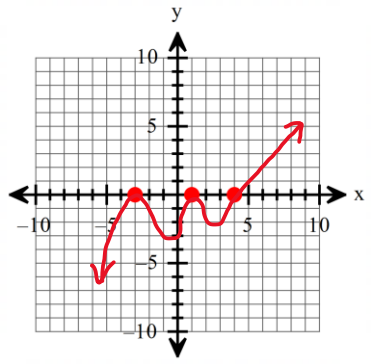
4. $\lim_{x\to-\infty} f(x) = \infty$ $\lim_{x\to+\infty} f(x) = \infty$

5. degree = 6, $\lim_{x\to-\infty} f(x) = -\infty$ $\lim_{x\to+\infty} f(x) = -\infty$



Zero	Multiplicity	Touch/Cross
0	5	C
7	1	C

6. degree = 7, $\lim_{x\to-\infty} f(x) = -\infty$ $\lim_{x\to+\infty} f(x) = \infty$



Zero	Multiplicity	Touch/Cross
-3	2	T
1	2	T
4	3	C

7. $4x^2 + 12xy + 9y^2$

8. $8x^3 - 12x^2y + 6xy^2 - y^3$

9. $x^2 + x - 30$

10. $16x^2 + 9$

11. $(8x - 5)(8x + 5)$

12. $(x - 5)(x^2 + 5x + 25)$

13. $(x - 7)(x + 3)$

14. $-3(3x + 2)(x - 5)$

15. $x = 9, 8$

16. $x = \frac{3\pm\sqrt{11}i}{10}$

17. $-x^2 + 25x - 8$

18. no, $2x^2 - x + 3 - \frac{5}{x-1}$

19. $2x^2 + x + 3 - \frac{13}{x+1}$

20. $f(x) = x(x - 3)(x + 5)$

$f(x) = x^3 + 2x^2 - 15x$

21. $x = 0,\ -3,\ -1$

22. $x = 8,\ -2$

23. $\pm1, \pm3, \pm9, \pm27, \pm\frac{1}{3}$

24. $f(x) = (x - 2)(x + 1)(x - 3i)(x + 3i)$

25. $f(x) = x^3 + x + 10$

26. $x = -1$, rational

$x = \sqrt{2}, -\sqrt{2}$, irrational

$f(x) = (x + 1)(x - \sqrt{2})(x + \sqrt{2})$

27. $f(x) = -3x(x - 2)^2(x + 1)$

Degree = 4

$\lim_{x\to-\infty} f(x) = -\infty$ $\lim_{x\to+\infty} f(x) = -\infty$

x-int: (0, 0); (2, 0); (-1, 0)