Long Division		Synthetic Division
1. $(3x^2 + 5x - 10) \div (x + 3)$	2. $(6x^4 + x^3 - 5x) \div (x^2 + 1)$	3. $(-x^3 + 3x^2) \div (x + 1)$

4. If $(x - 1)$ is a factor of $10x^5 - 10x^4 - 3x^3 + 3x^2 - 18x + 18$, what are all the factors of $f(x)$.	5. Is $(x + 5)$ a factor of $(4x^4 - 10x^3 - 150x^2 - x + 3)$?

For 6-7, a zero of the function is given. Find all the zeros of the function.

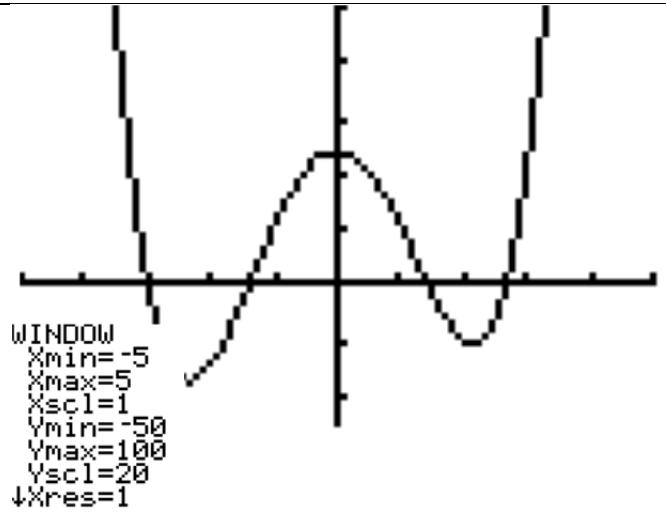|	
6. $f(x) = 2x^3 - 10x^2 - 71x - 9$; $f(9) = 0$	7. $f(x) = x^5 - 5x^4 - 2x^3 + 10x^2 - 15x + 75$; $f(5) = 0$

For 8-9, use the graph of the function to determine at least one zero, then find the exact values of all the zeros using the Factor Theorem.

8. $f(x) = 6x^3 - 31x^2 + 34x + 15$

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WINDOW
Xmin=-4
Xmax=4
Xscl=1
Ymin=-20
Ymax=30
Yscl=10
↓Xres=1
```

9. $f(x) = 3x^4 + x^3 - 30x^2 - 2x + 48$

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WINDOW
Xmin=-5
Xmax=5
Xscl=1
Ymin=-50
Ymax=100
Yscl=20
↓Xres=1
```
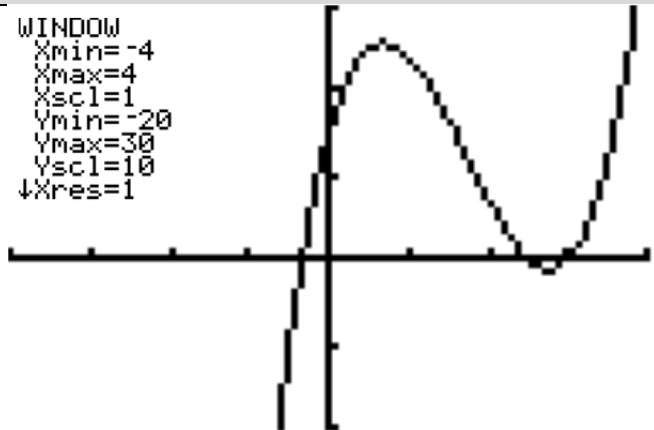
For 10-13, one zero is given of $f(x)$. List one other zero.

10. $12 + 6i$	11. $-9i$	12. $4i - 10$	13. $\sqrt{13} + 2i$

Answers to 5.2 CA:		
1. $3x - 4 + \dfrac{2}{x+3}$	2. $6x^2 + x - 6 - \dfrac{6x-6}{x^2+1}$	3. $-x^2 + 4x - 4 + \dfrac{4}{x+1}$
4. $(x-1)(2x^2-3)(5x^2+6)$	5. No. There is a remainder of 8.	6. $9, \ -2 \pm \dfrac{\sqrt{14}}{2}$
7. $5, \ \pm i\sqrt{3}, \ \pm\sqrt{5}$	8. $-\dfrac{1}{3}, \ \dfrac{5}{2}, \ 3$	9. $-3, \ -\sqrt{2}, \ \sqrt{2}, \ \dfrac{8}{3}$
10. $12 - 6i$	11. $9i$	12. $-4i - 10$	13. $\sqrt{13} - 2i$