LESSON 79

9. Factored form: $f(x) = 2x^2 - 2$
$= 2(x^2 - 1)$
$= 2(x - 1)(x + 1)$

Zeros: -1 (multiplicity 1)
1 (multiplicity 1)

y-intercept: -2

End behavior: $f(x) \to \infty$ as $x \to -\infty$.
$f(x) \to \infty$ as $x \to \infty$.
Both ends up

10. Factored form: $f(x) = -x^3 + 4x$
$= -x(x^2 - 4)$
$= -x(x + 2)(x - 2)$

Zeros: 0 (multiplicity 1)
-2 (multiplicity 1)
2 (multiplicity 1)

y-intercept: 0

End behavior: $f(x) \to \infty$ as $x \to -\infty$.
$f(x) \to -\infty$ as $x \to \infty$.
Left end up and right end down

11. Factored form: $f(x) = x^3 + x^2 - 4x - 4$
$= x^2(\mathrm{x} + 1) - 4(x + 1)$
$= (x + 1)(x^2 - 4)$
$= (x + 1)(x + 2)(x - 2)$

Zeros: -1 (multiplicity 1)
-2 (multiplicity 1)
2 (multiplicity 1)

y-intercept: -4

End behavior: $f(x) \to -\infty$ as $x \to -\infty$.
$f(x) \to \infty$ as $x \to \infty$.
Left end down and right end up

12. Factored form: $f(x) = x^4 - 8x^2 + 16$
$= (x^2 - 4)^2$
$= ((x + 2)(x - 2))^2$
$= (x + 2)^2(x - 2)^2$

Zeros: -2 (multiplicity 2)
2 (multiplicity 2)

y-intercept: 16

End behavior: $f(x) \to \infty$ as $x \to -\infty$.
$f(x) \to \infty$ as $x \to \infty$.
Both ends up