

7.4 Pre-Calculus Math II

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2.

a) $f(x) = x+5$

i) Zero

$$0 = x+5$$

$$-5 = x$$

ii) reciprocal

$$y = \frac{1}{x+5}$$

iii) non-perm. values

$$x+5 \neq 0$$

$$x \neq -5$$

iv) the zeros of the function are the non-permissible values for the reciprocal

v) equation of the vertical asymptote
 $x = -5$

b) $g(x) = 2x+1$

i) Zero

$$2x+1 = 0$$

$$2x = -1$$

$$x = -\frac{1}{2}$$

ii) reciprocal

$$y = \frac{1}{2x+1}$$

iii) non-perm. val.

$$2x+1 \neq 0$$

$$x \neq -\frac{1}{2}$$

iv) as in a) iv

v) equation of the vertical asymptote
 $x = -\frac{1}{2}$

c) $h(x) = x^2 - 16$

i) Zero

$$0 = x^2 - 16$$

$$16 = x^2$$

$$\pm 4 = x$$

ii) reciprocal

$$y = \frac{1}{x^2 - 16}$$

iii) non-perm. val.

$$x^2 - 16 \neq 0$$

$$x \neq \pm 4$$

iv) as in a) iv

v) equations of the vertical asymptotes
 $x = 4, x = -4$

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2. d) $f(x) = x^2 + x - 12$

i) zeros

$$0 = x^2 + x - 12$$

$$0 = (x+4)(x-3)$$

$$x+4=0 \text{ or } x-3=0$$

$$x = -4 \quad x = 3$$

ii) reciprocal

$$y = \frac{1}{x^2 + x - 12}$$

iii) non-perm. val.

$$x^2 + x - 12 \neq 0$$

$$x \neq -4, x \neq 3$$

iv) as in a)iv

v) equation of the vertical asymptotes

$$x = -4, x = 3$$

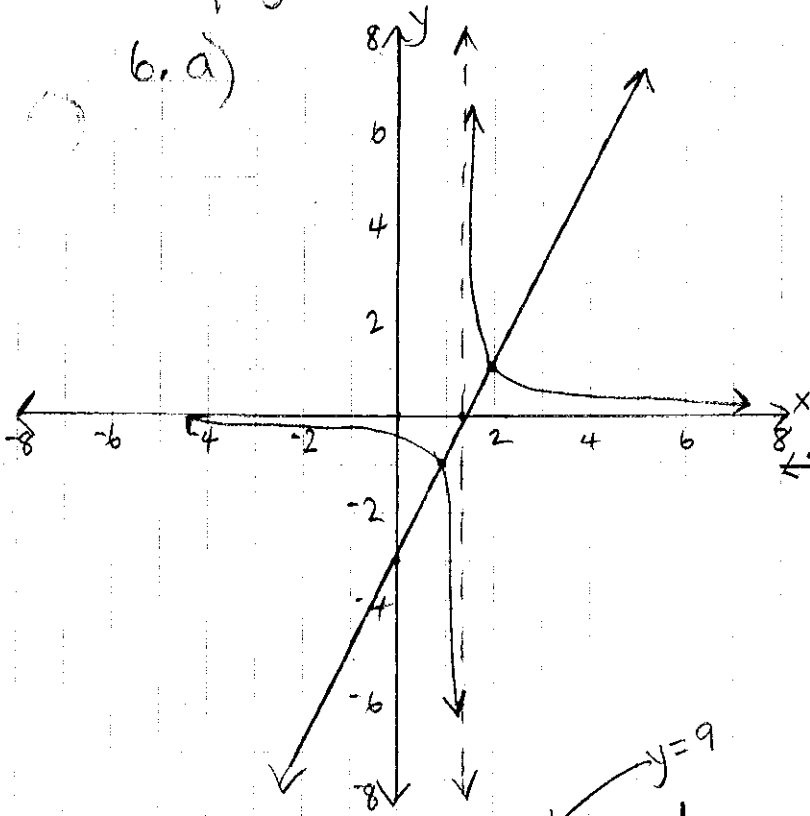
9. a) linear so it has to be B or D
x-intercept is 2 so asymptote must be $x \neq 2$
answer: graph D

b) quadratic so it has to be A or C
only 1 x-intercept at 2 so only 1 asymptote at $x \neq 2$
answer: graph C

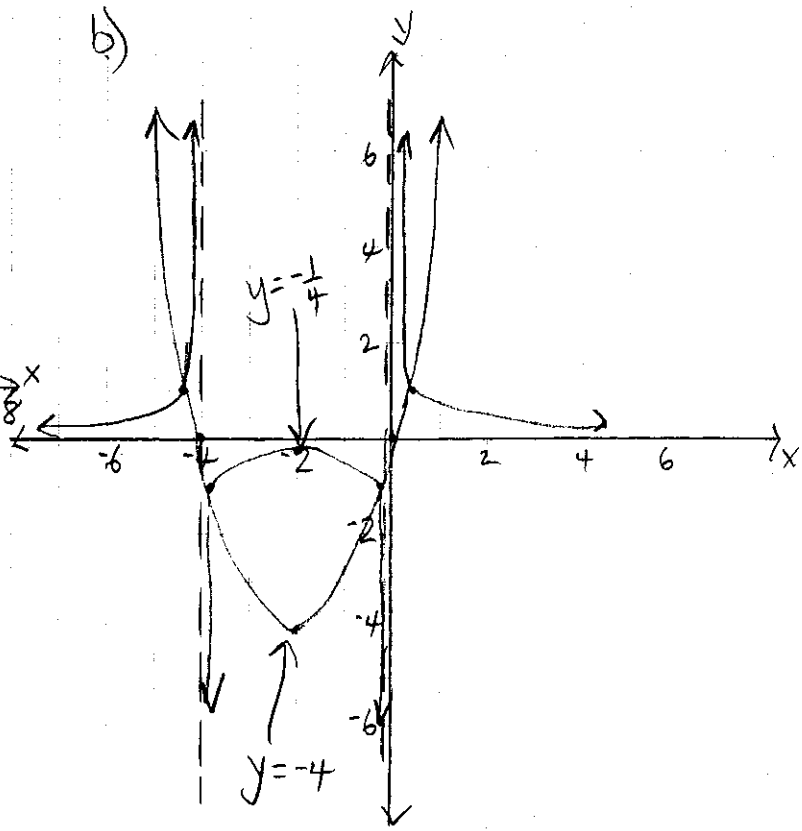
c) quadratic
answer: graph A
asymptotes at $x \neq -1$ and $x \neq 2$ fit

d) linear
answer: B
asymptote at $x \neq -1$ fits

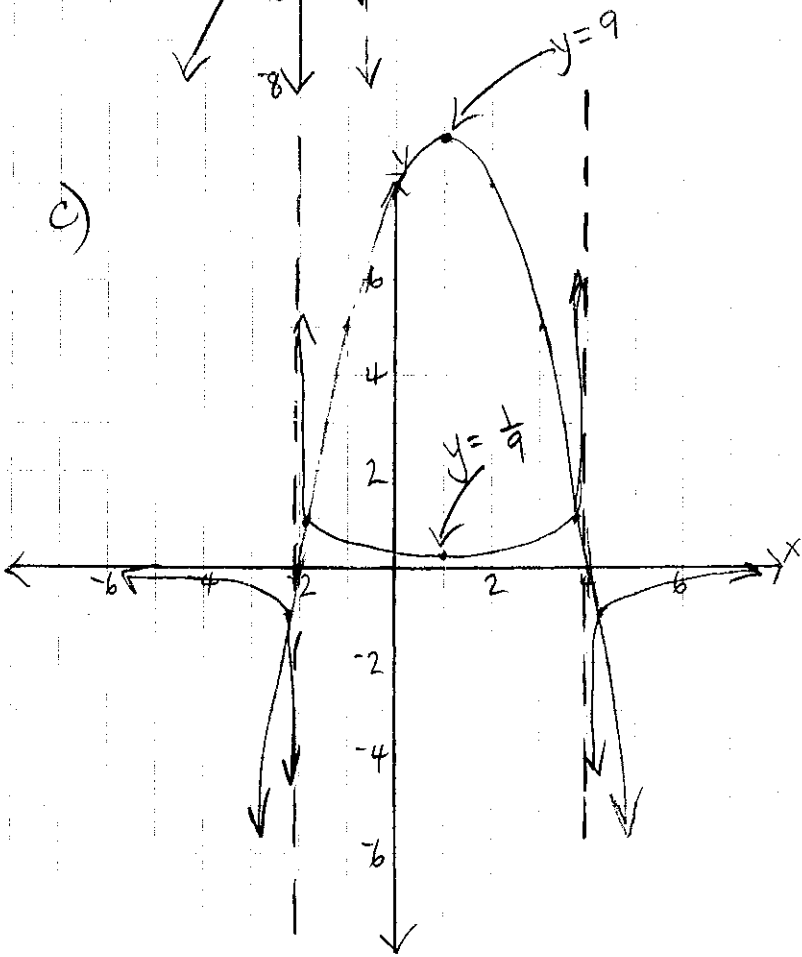
b. a)



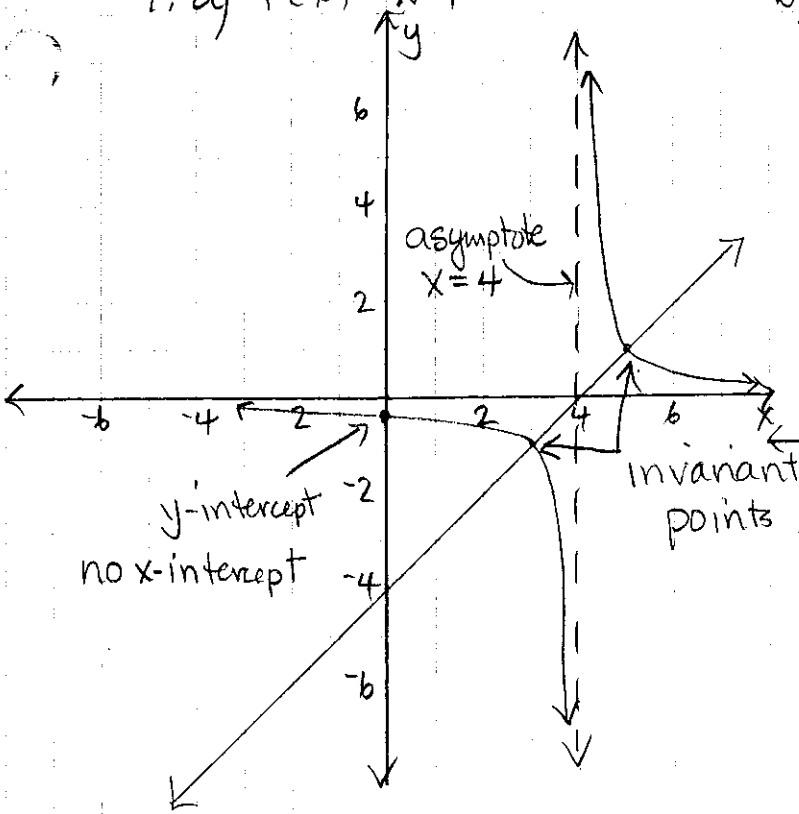
b)



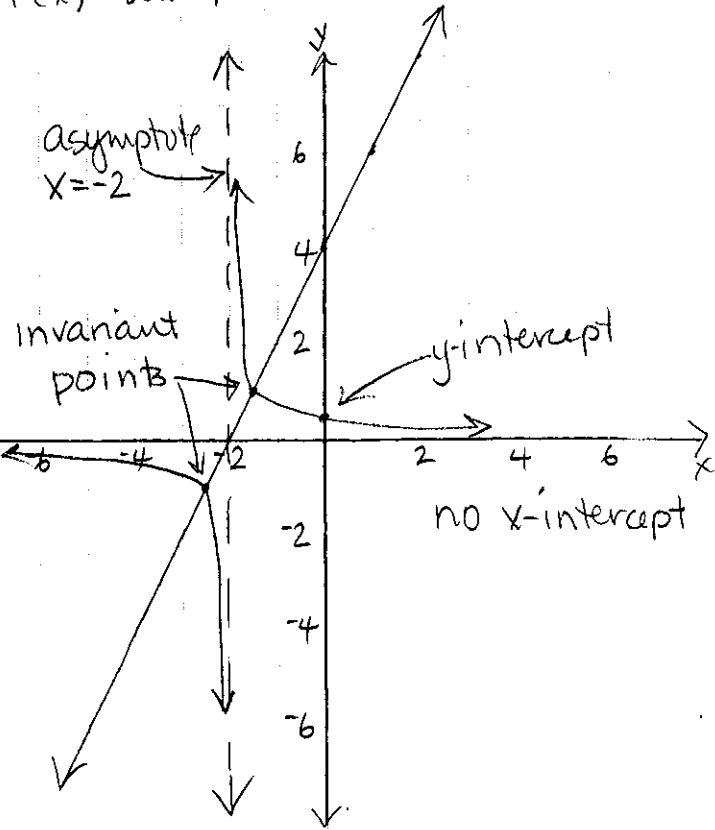
c)



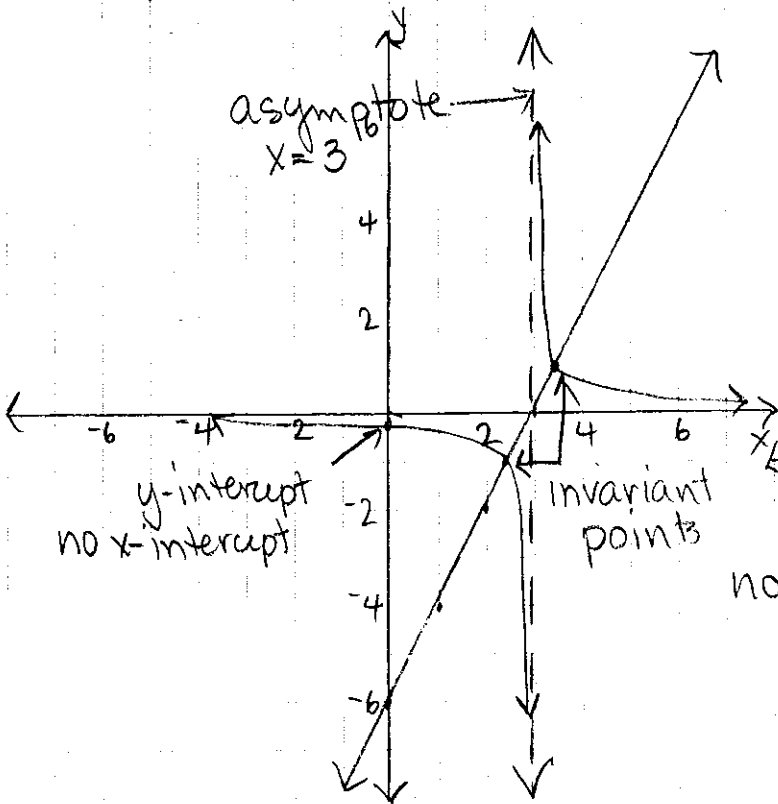
7. a) $f(x) = x - 4$



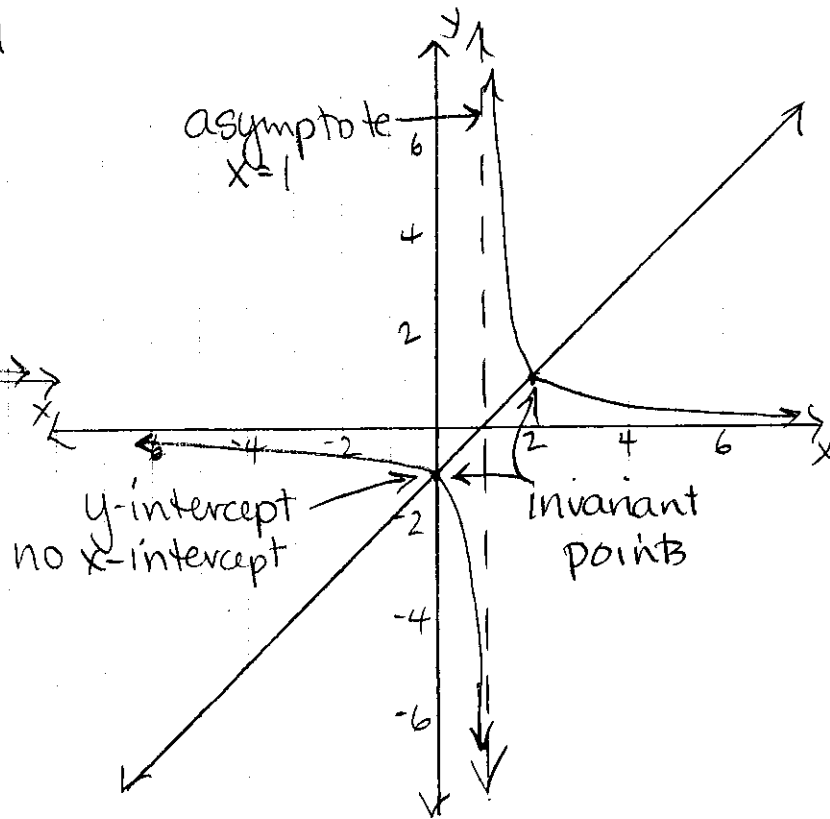
b) $f(x) = 2x + 4$



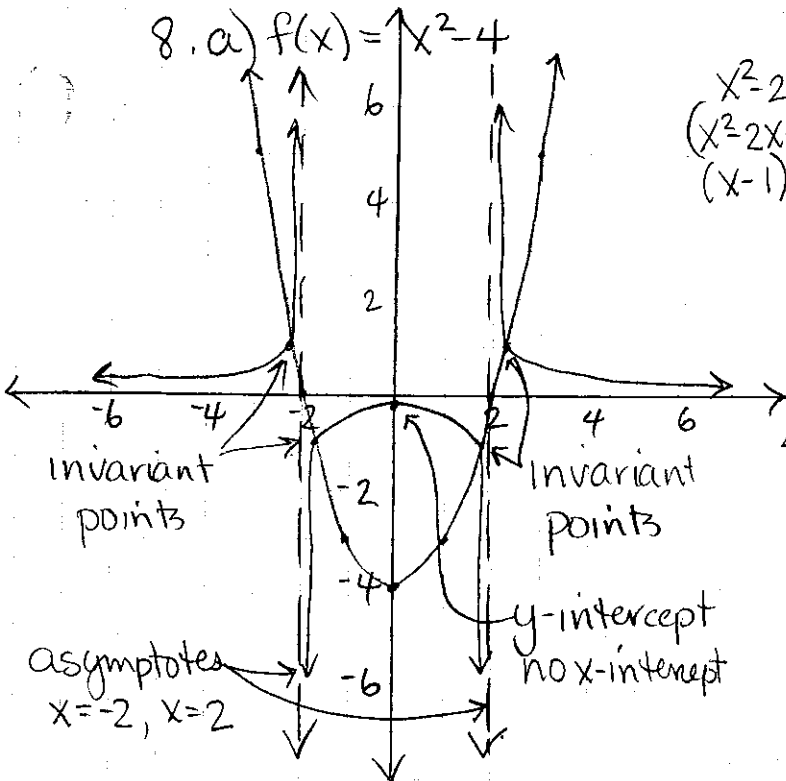
c) $f(x) = 2x - 6$



d) $f(x) = x - 1$

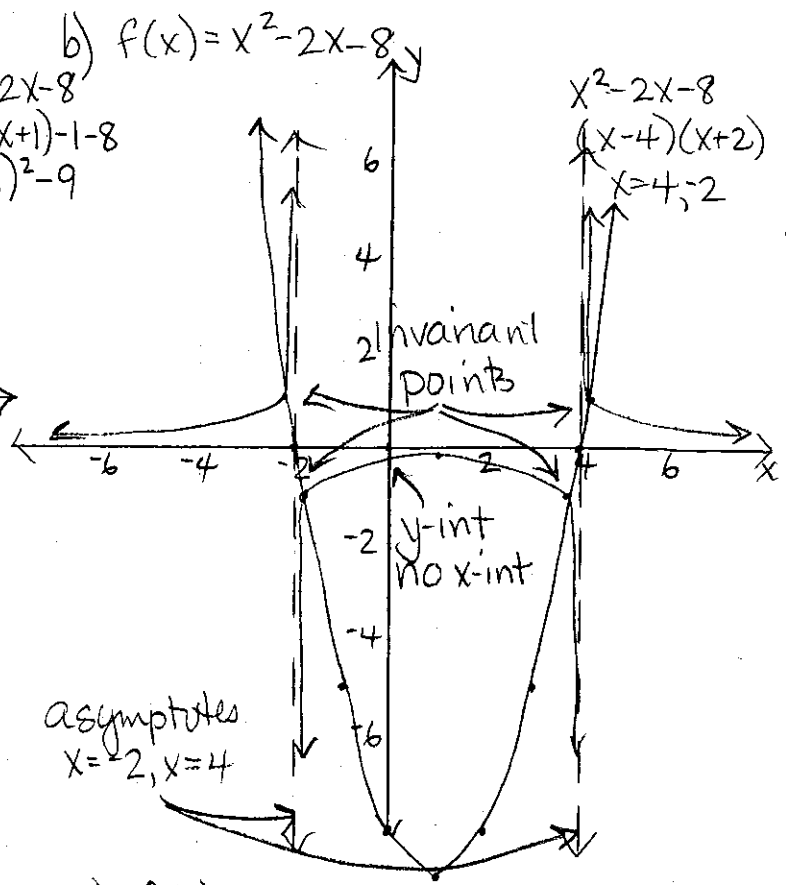


8. a) $f(x) = x^2 - 4$



b) $f(x) = x^2 - 2x - 8$

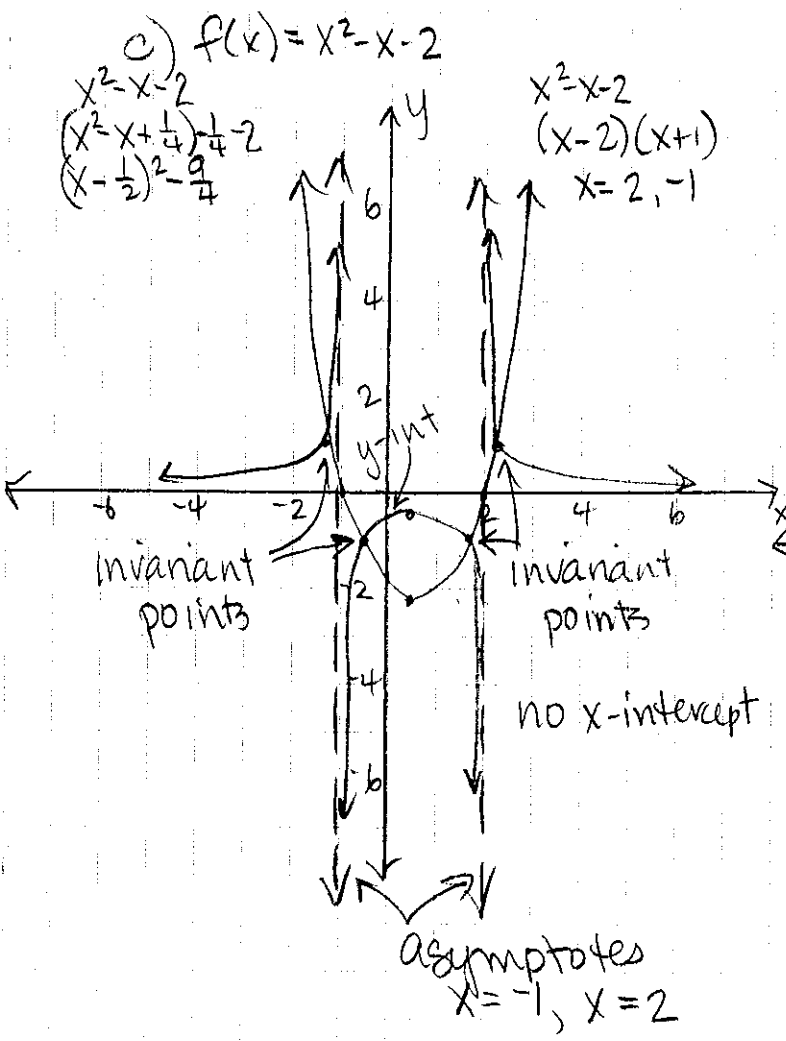
$x^2 - 2x - 8$
 $(x^2 - 2x + 1) - 1 - 8$
 $(x - 1)^2 - 9$



c) $f(x) = x^2 - x - 2$

$x^2 - x - 2$
 $(x^2 - x + \frac{1}{4}) - \frac{1}{4} - 2$
 $(x - \frac{1}{2})^2 - \frac{9}{4}$

$x^2 - x - 2$
 $(x - 2)(x + 1)$
 $x = 2, -1$



d) $f(x) = x^2 + 2$

