

Aim: When are polynomial functions greater than zero? less than zero?

I. Do Now:

1. Find the domain:

(a) $f(x) = \frac{3}{x} + \frac{2}{x-4}$

(b) $f(x) = \frac{5}{\sqrt{3-x}}$

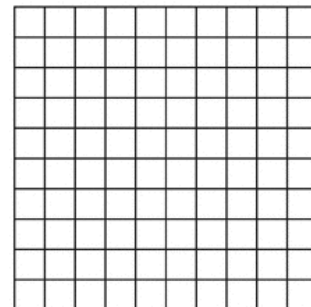
II. Development:

2. Consider the function $f(x) = x(x+2)$.

When is $f(x) = 0$?

When is $f(x) > 0$?

When is $f(x) < 0$?



III. Applications: For each function:

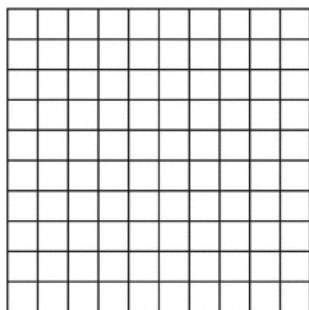
(a) find all zeros

(c) state intervals where $f(x) > 0$

(b) sketch its graph

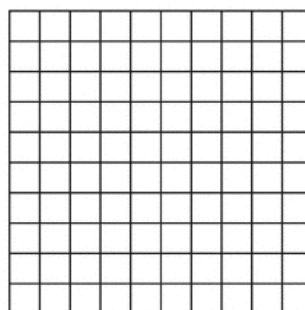
(d) state intervals where $f(x) < 0$

3. $f(x) = (x-1)(x+2)(x+4)$



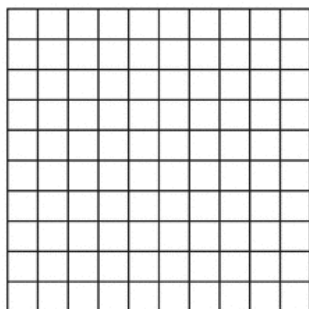
Zeros: _____
 $f(x) > 0$ on: _____
 $f(x) < 0$ on: _____

4. $f(x) = (x-3)^2$



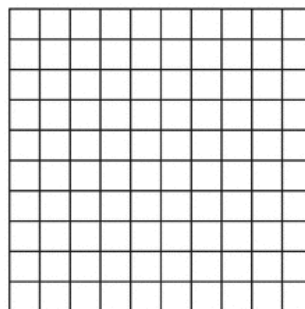
Zeros: _____
 $f(x) > 0$ on: _____
 $f(x) < 0$ on: _____

5. $f(x) = x^3 - 16x$



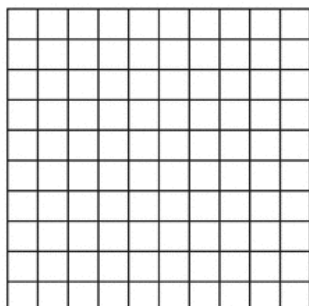
Zeros: _____
 $f(x) > 0$ on: _____
 $f(x) < 0$ on: _____

6. $f(x) = (x-3)(x+4)(x-1)(x-6)$



Zeros: _____
 $f(x) > 0$ on: _____
 $f(x) < 0$ on: _____

7. $f(x) = x(x-1)^2(x+4)(x+2)$



Zeros: _____
 $f(x) > 0$ on: _____
 $f(x) < 0$ on: _____

8. Find the domain of $f(x) = \frac{5}{\sqrt{x^2 - 4}}$