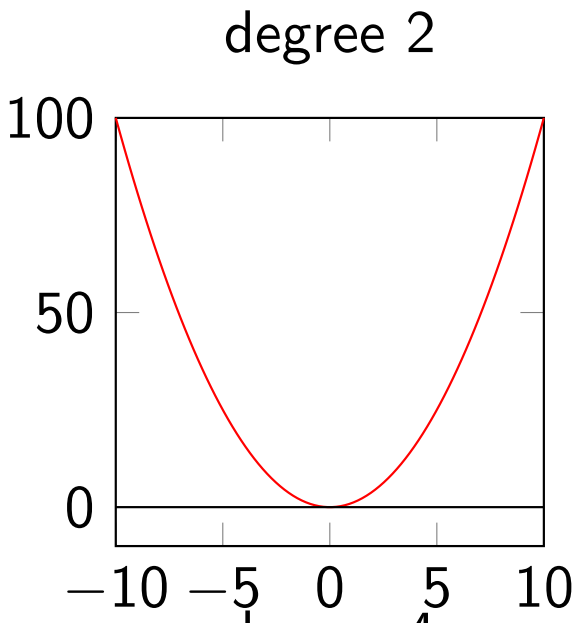
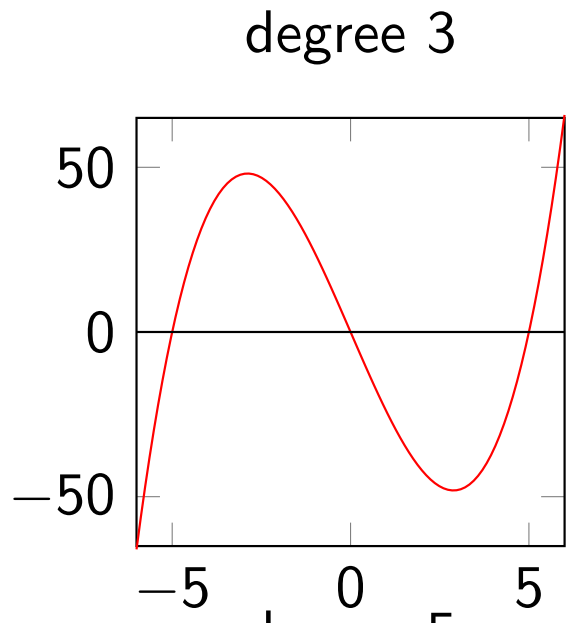
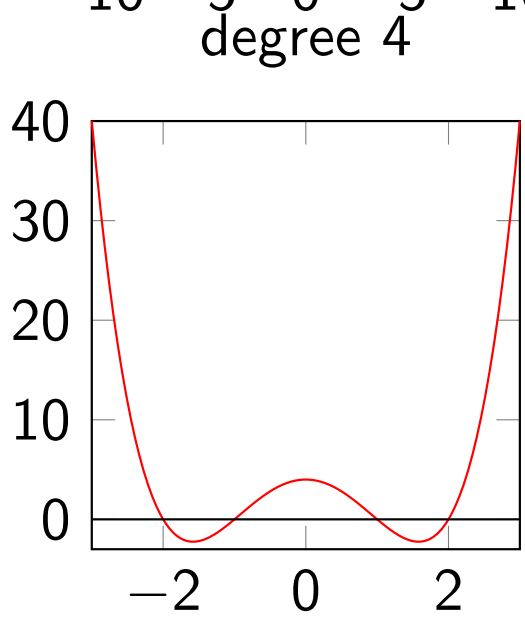
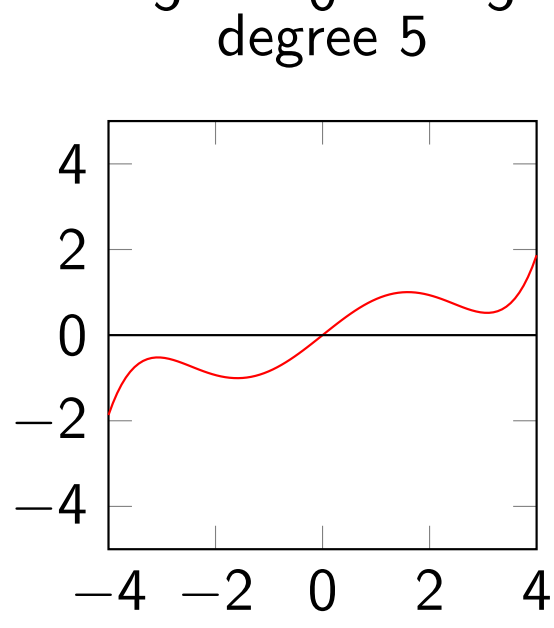
Positive and Negative Intervals of Polynomials

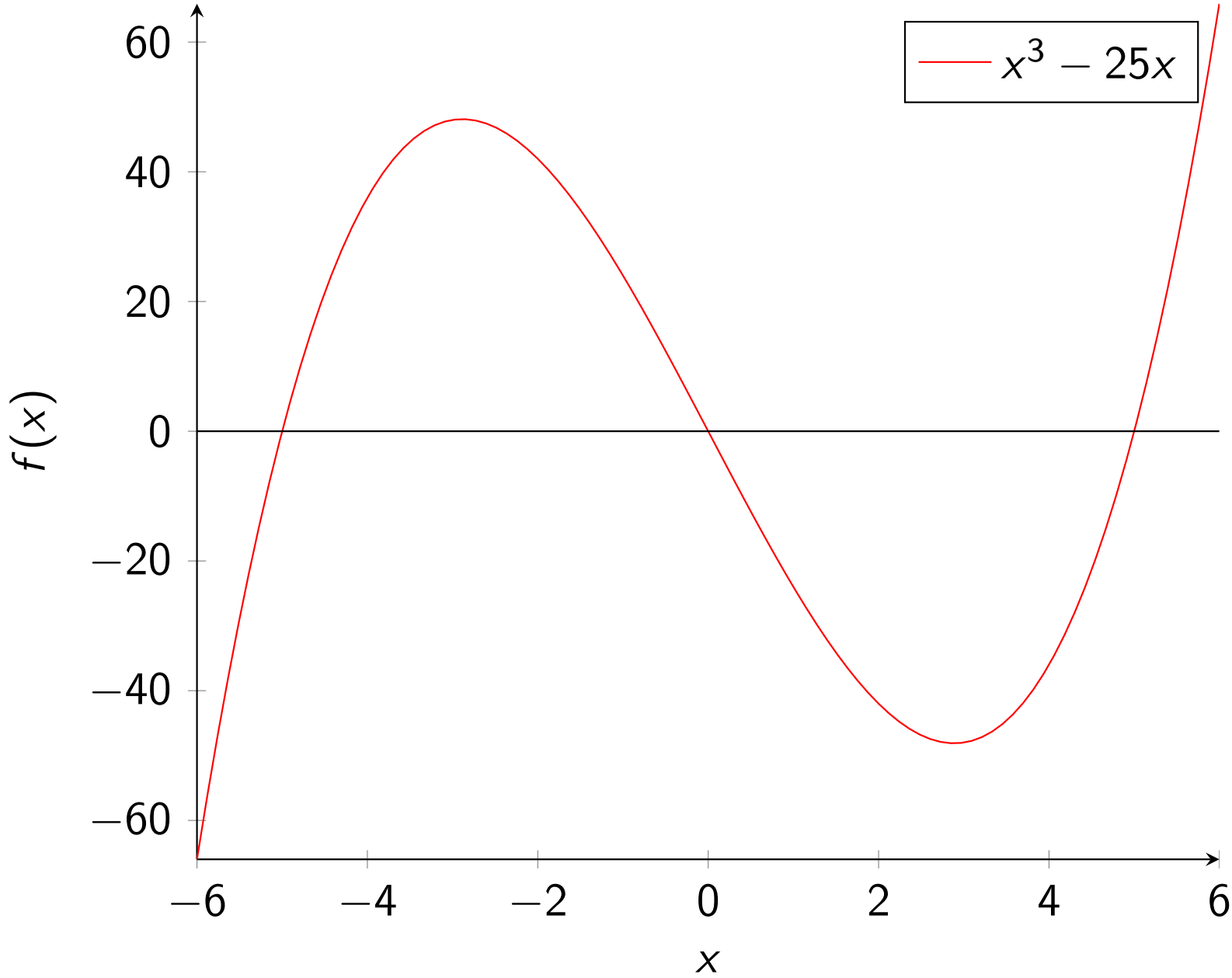
April 28, 2020


degree 2
100
50
0
−10
−5
0
5
10


degree 3
50
0
−50
−5
0
5


degree 4
40
30
20
10
0
−2
0
2


degree 5
4
2
0
−2
−4
−4
−2
0
2
4


$x^3 - 25x$
60
40
20
0
−20
−40
−60
$f(x)$
−6
−4
−2
0
2
4
6
x

$x^3 - 25x$

$$f(x) = x^3 - 25x = 0$$

$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$

$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$
$$x \qquad 5$$

$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$
$$x \qquad 5$$
$$x \qquad -5$$

$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$
$$x \qquad 5$$
$$x \qquad -5$$
$$-5x$$

$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$
$$x \qquad 5$$
$$x \qquad -5$$
$$-5x + 5x = 0$$

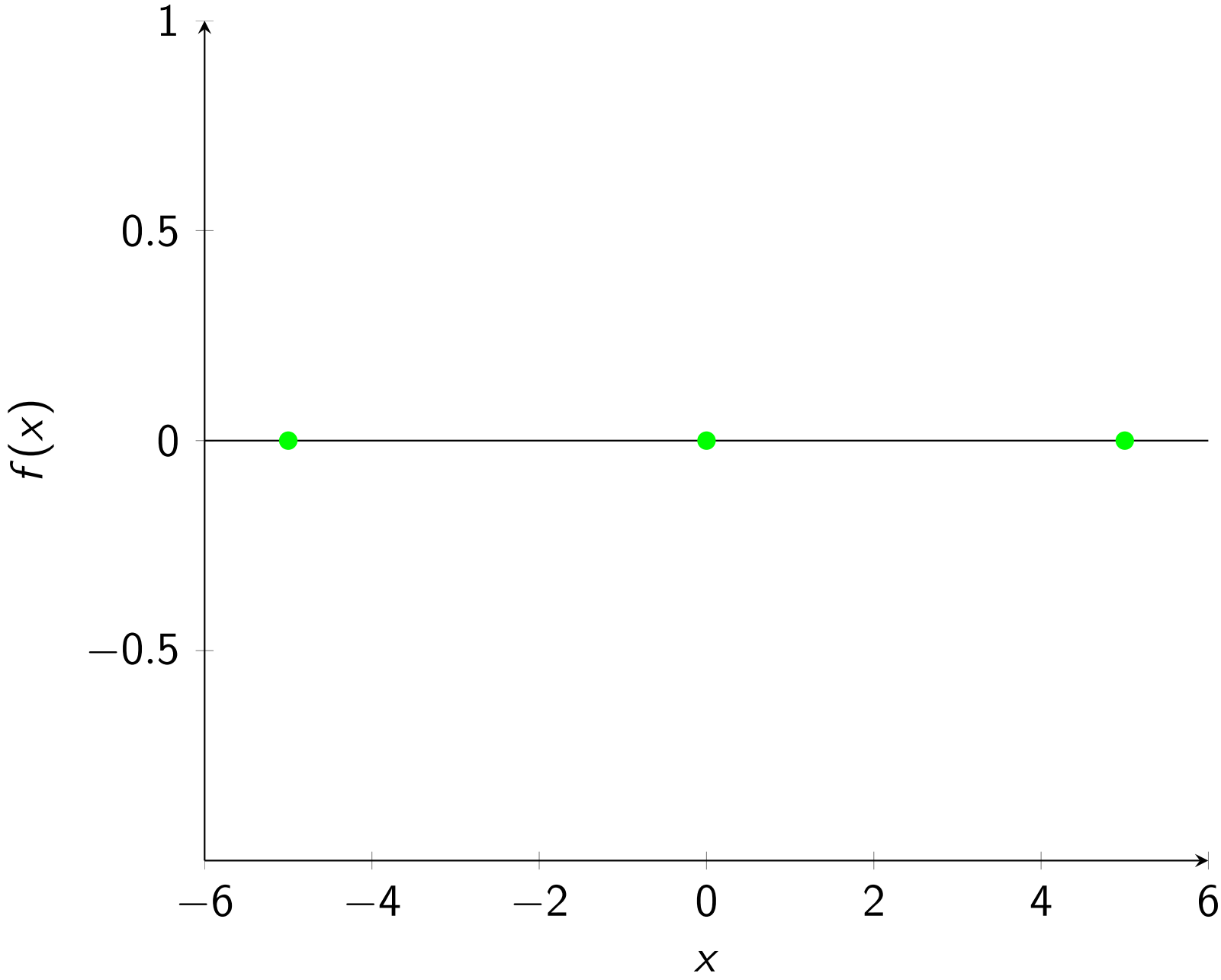
$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$
$$x \qquad 5$$
$$x \qquad -5$$
$$-5x + 5x = 0$$
$$x(x + 5)(x - 5) = 0$$

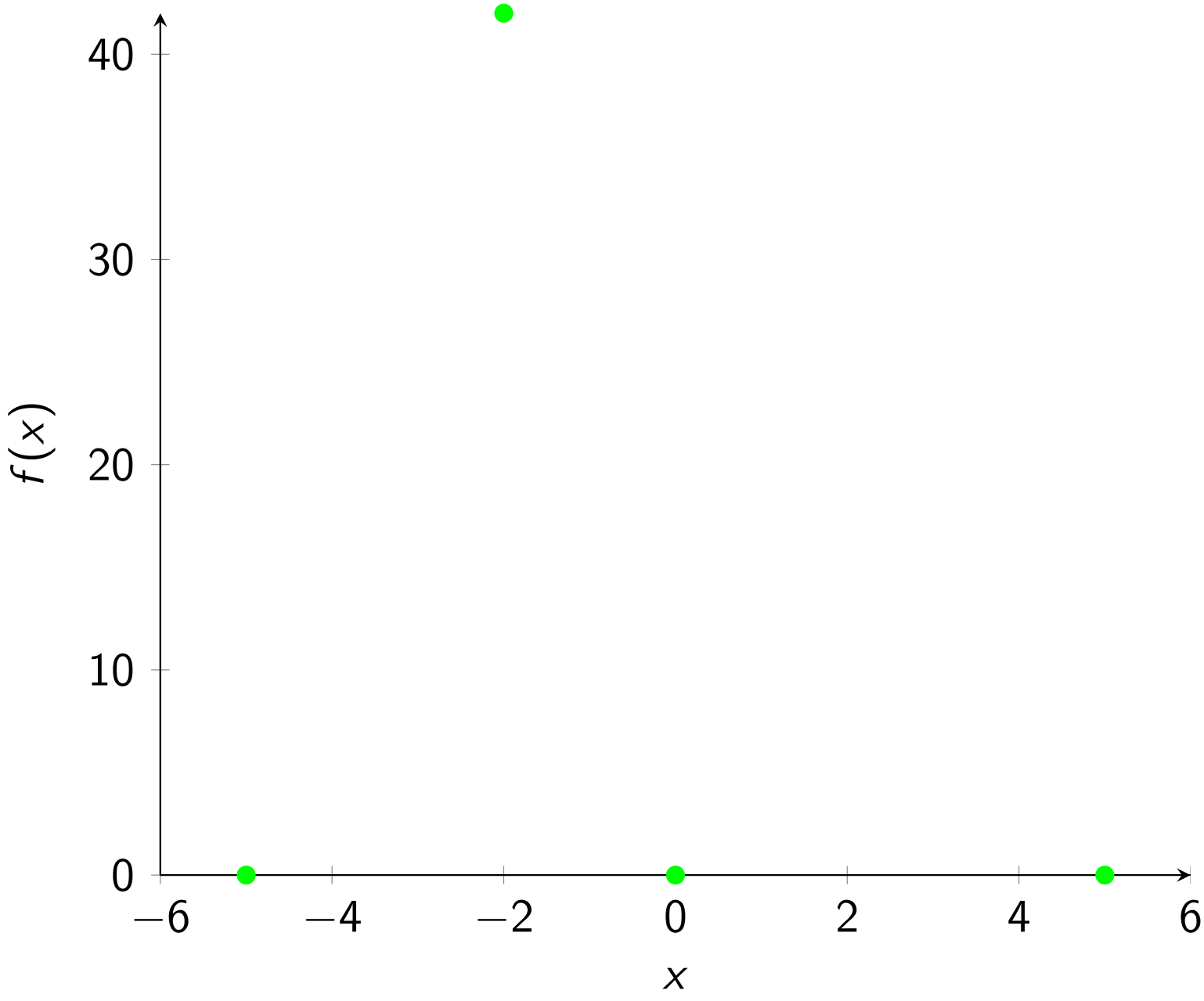
$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$
$$x \qquad 5$$
$$x \qquad -5$$
$$-5x + 5x = 0$$
$$x(x+5)(x-5) = 0$$
$$f(0) = (0)(5)(-5) = 0$$

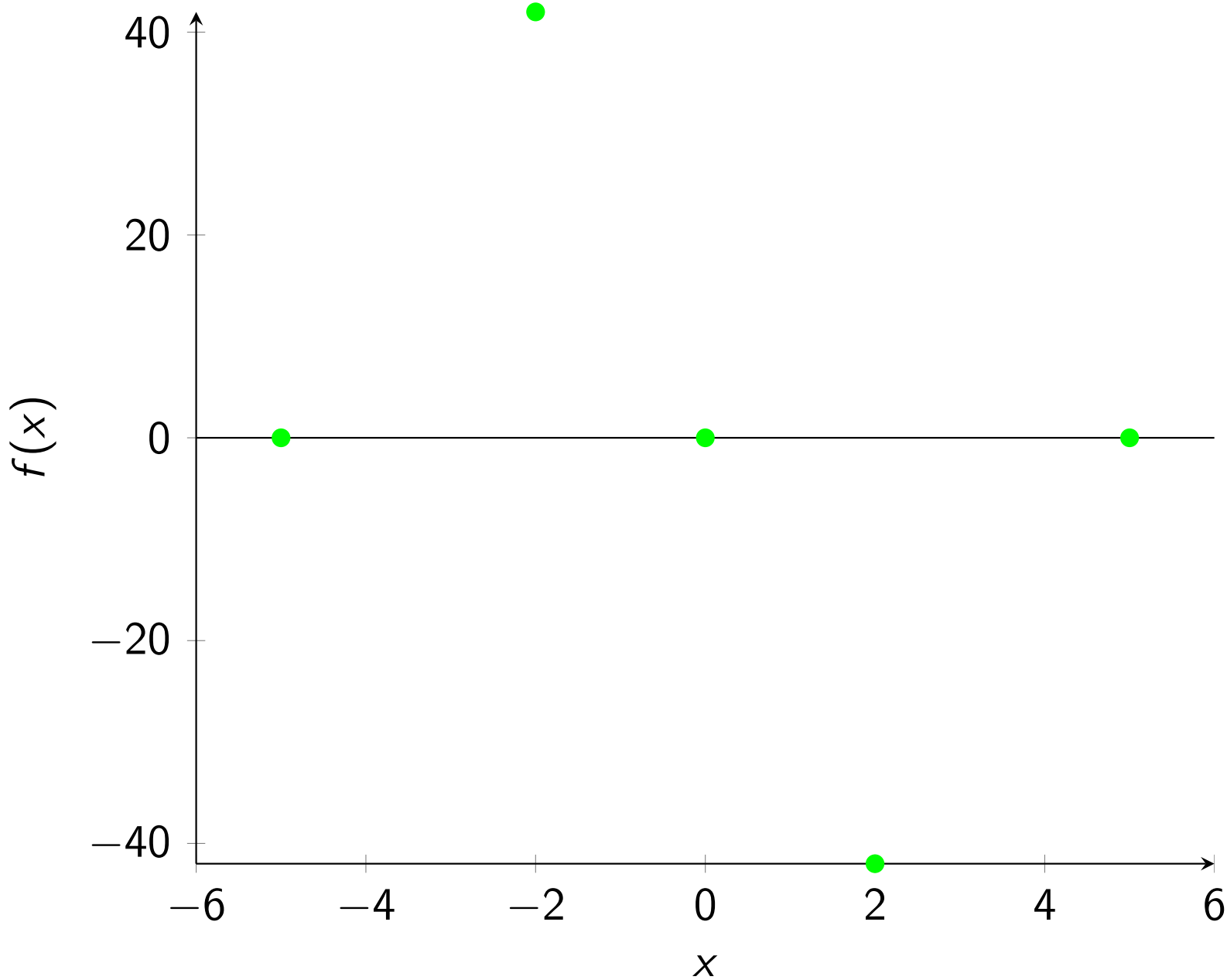
$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$
$$x \qquad 5$$
$$x \qquad -5$$
$$-5x + 5x = 0$$
$$x(x+5)(x-5) = 0$$
$$f(0) = (0)(5)(-5) = 0$$
$$f(-5) = (-5)(0)(-10) = 0$$

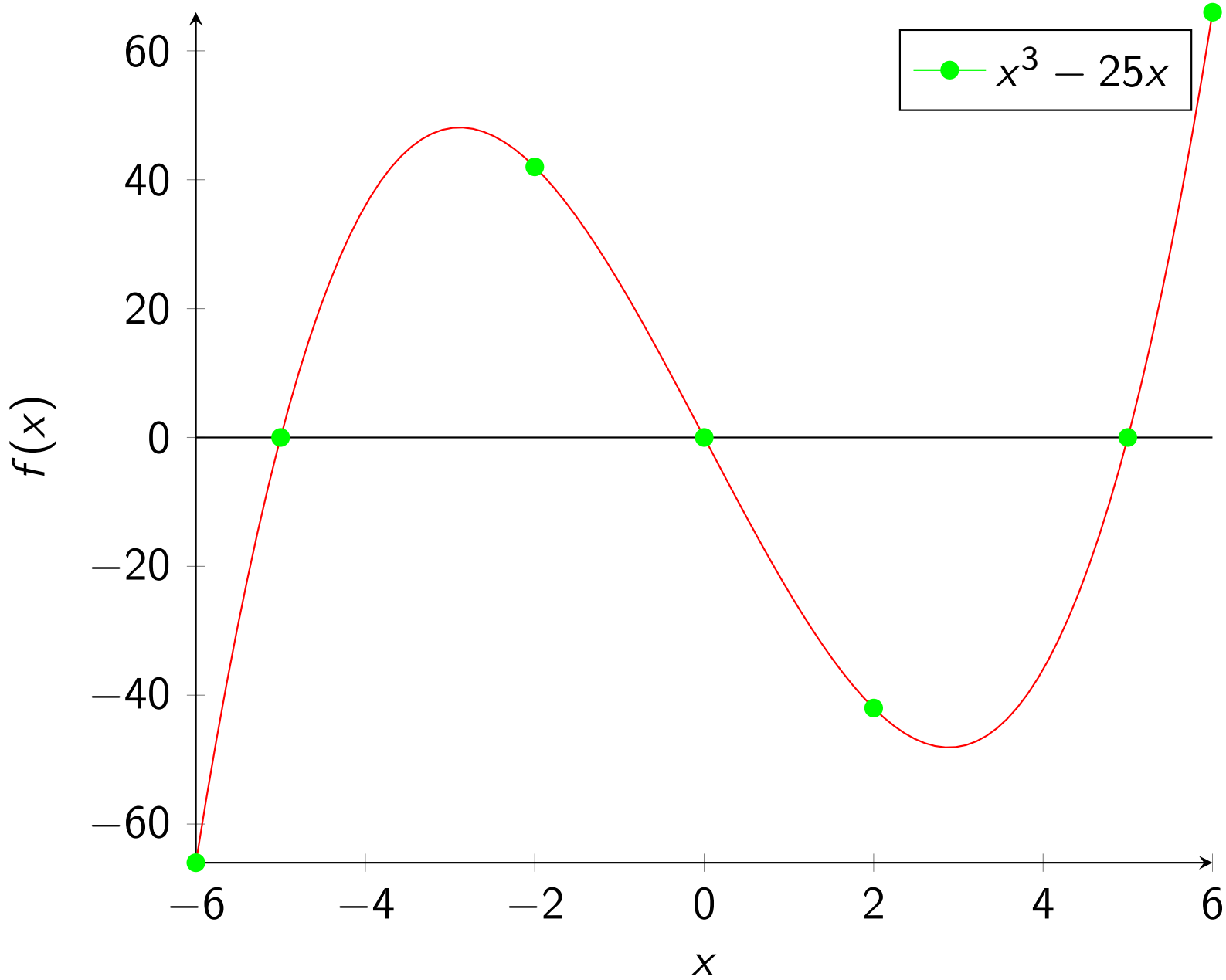
$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$
$$x \qquad 5$$
$$x \qquad -5$$
$$-5x + 5x = 0$$
$$x(x+5)(x-5) = 0$$
$$f(0) = (0)(5)(-5) = 0$$
$$f(-5) = (-5)(0)(-10) = 0$$
$$f(5) = (5)(10)(0) = 0$$

$$f(x) = x^3 - 25x = 0$$
$$x(x^2 - 25) = 0$$
$$x \qquad 5$$
$$x \qquad -5$$
$$-5x + 5x = 0$$
$$x(x+5)(x-5) = 0$$
$$f(0) = (0)(5)(-5) = 0$$
$$f(-5) = (-5)(0)(-10) = 0$$
$$f(5) = (5)(10)(0) = 0$$


1
0.5
0
−0.5
f(x)
−6
−4
−2
0
2
4
6
x


40
30
20
10
0
$f(x)$
−6
−4
−2
0
2
4
6
x


40
20
0
−20
−40
f(x)
−6
−4
−2
0
2
4
6
x


$x^3 - 25x$
60
40
20
0
−20
−40
−60
$f(x)$
−6
−4
−2
0
2
4
6
x