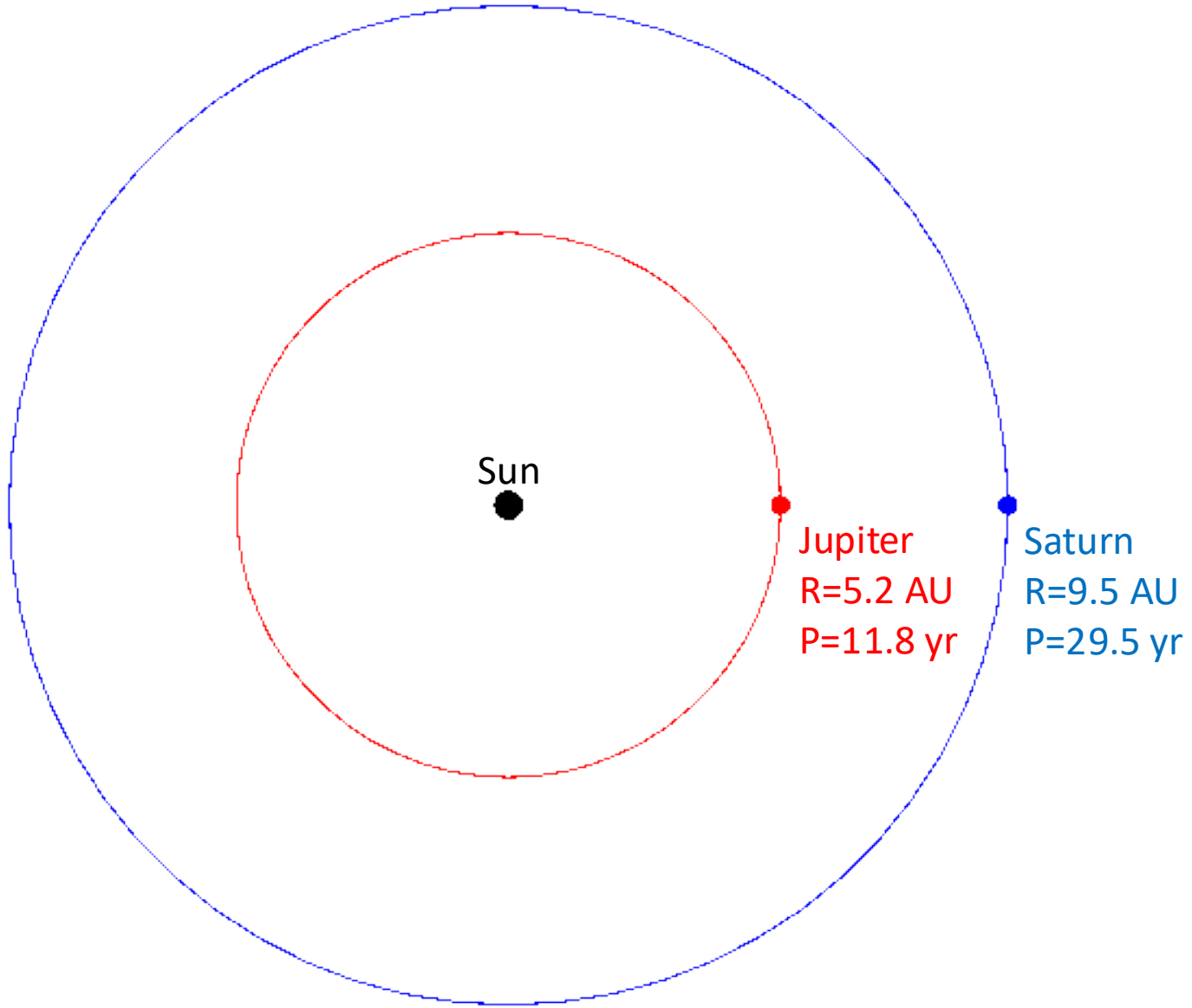
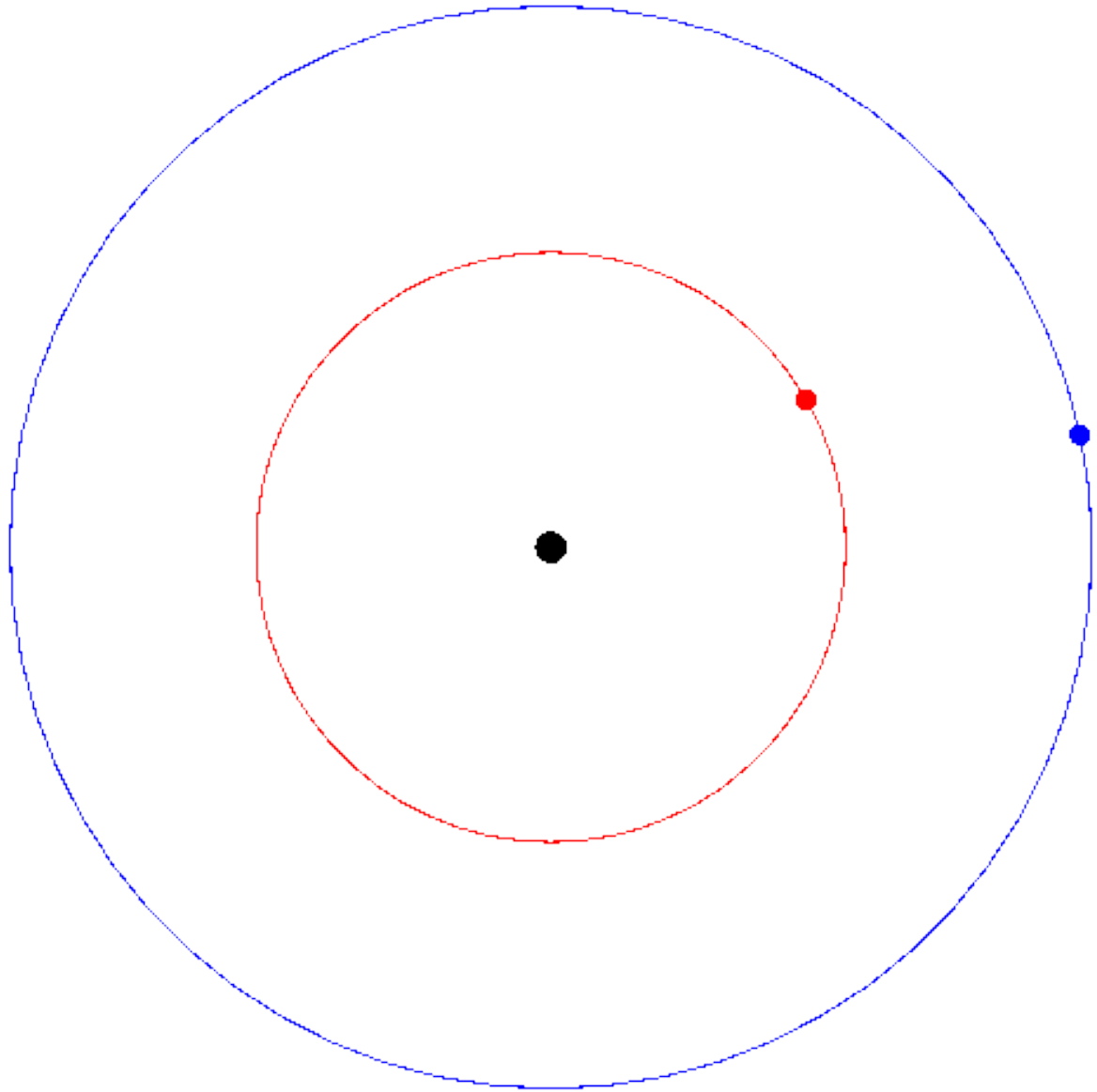
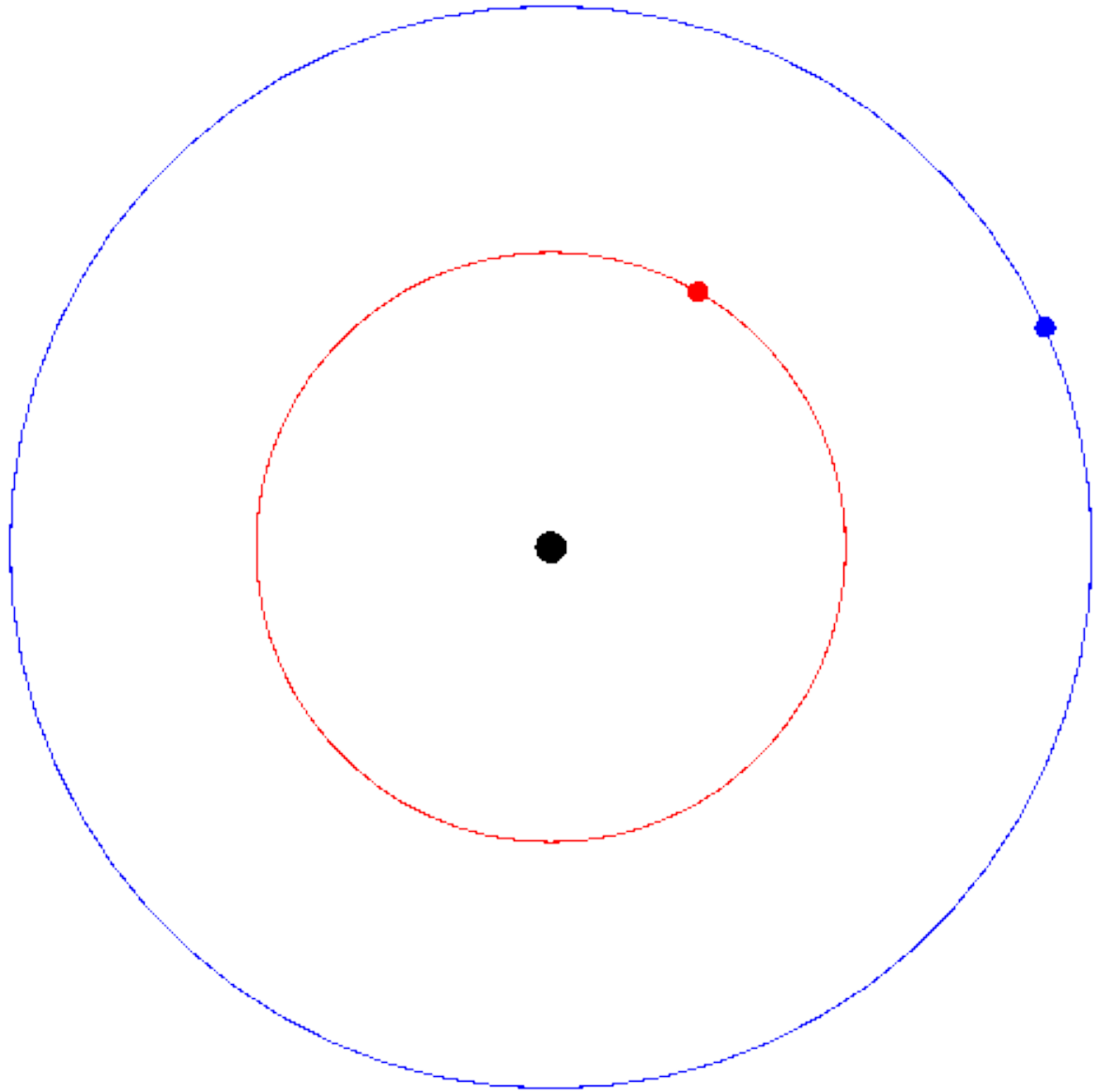
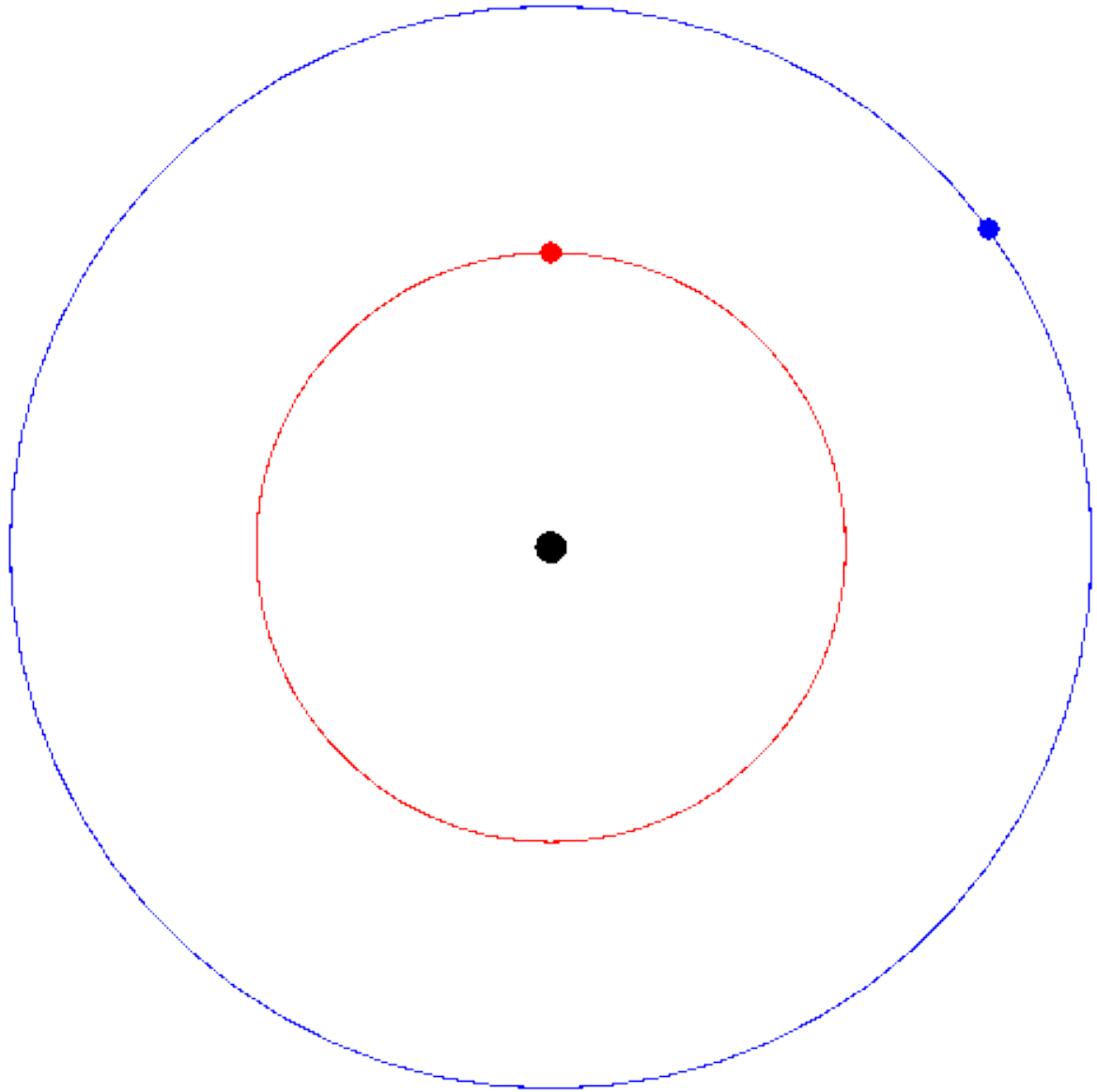
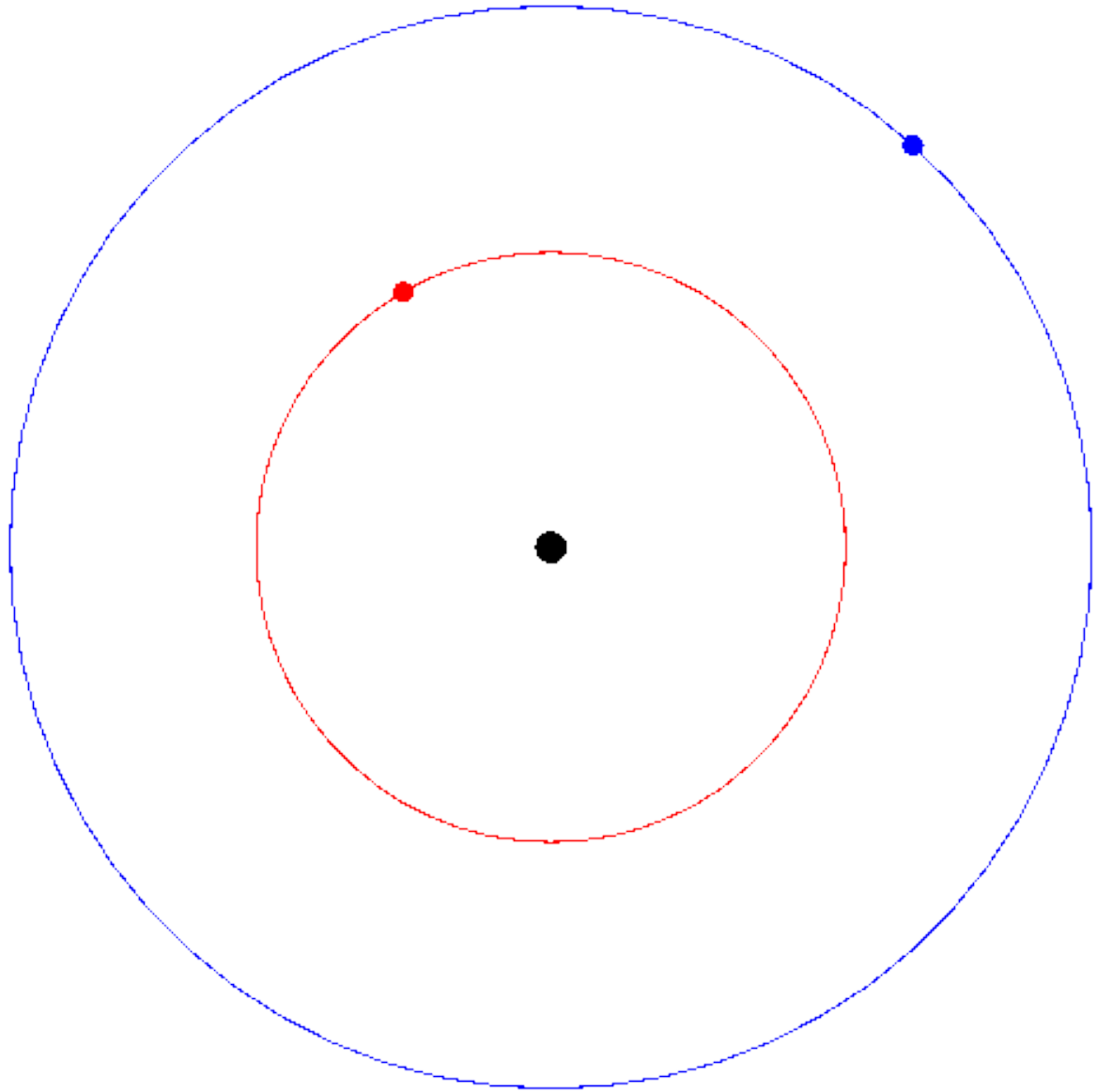
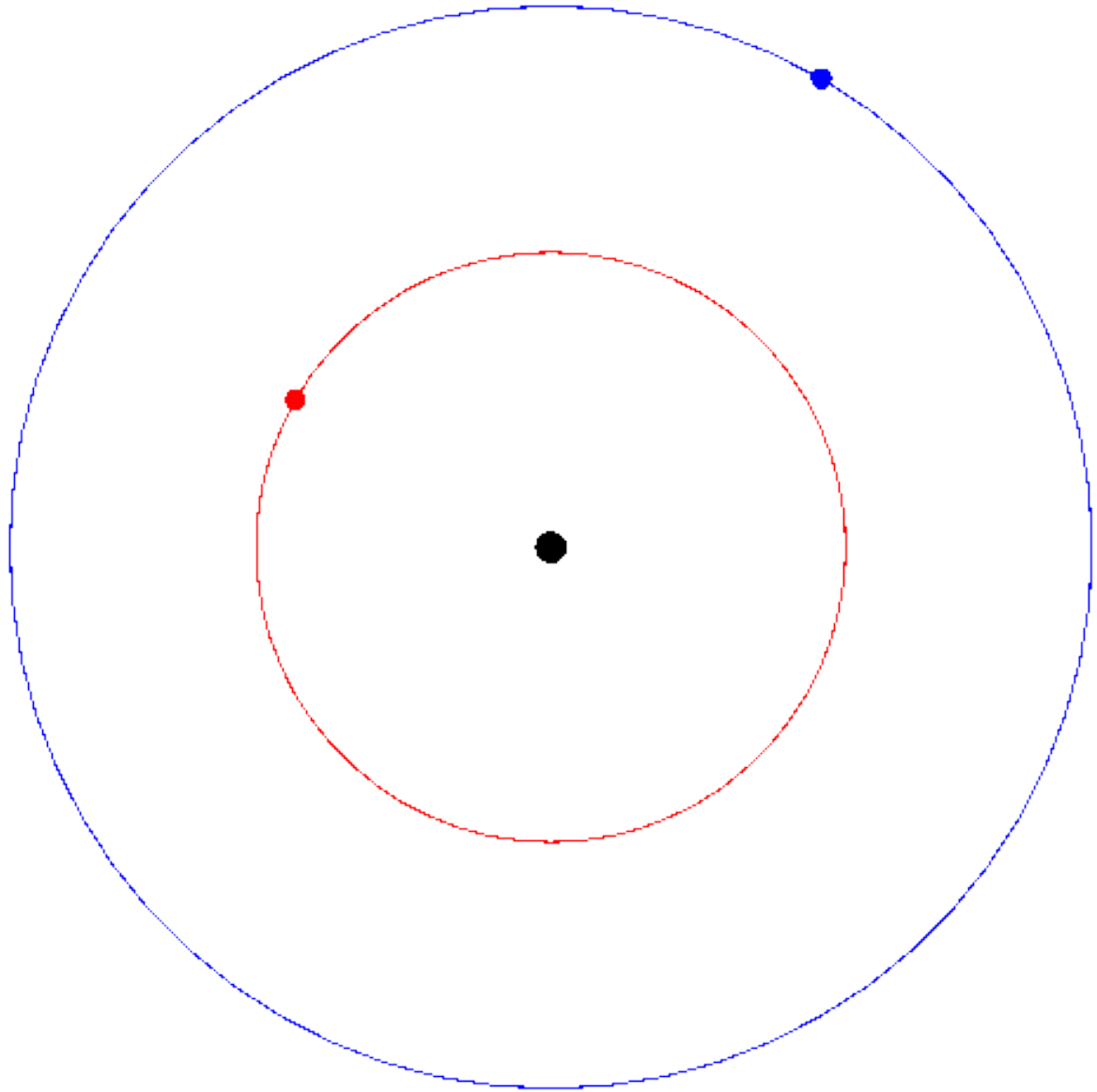

Sun
Jupiter
R=5.2 AU
P=11.8 yr
Saturn
R=9.5 AU
P=29.5 yr

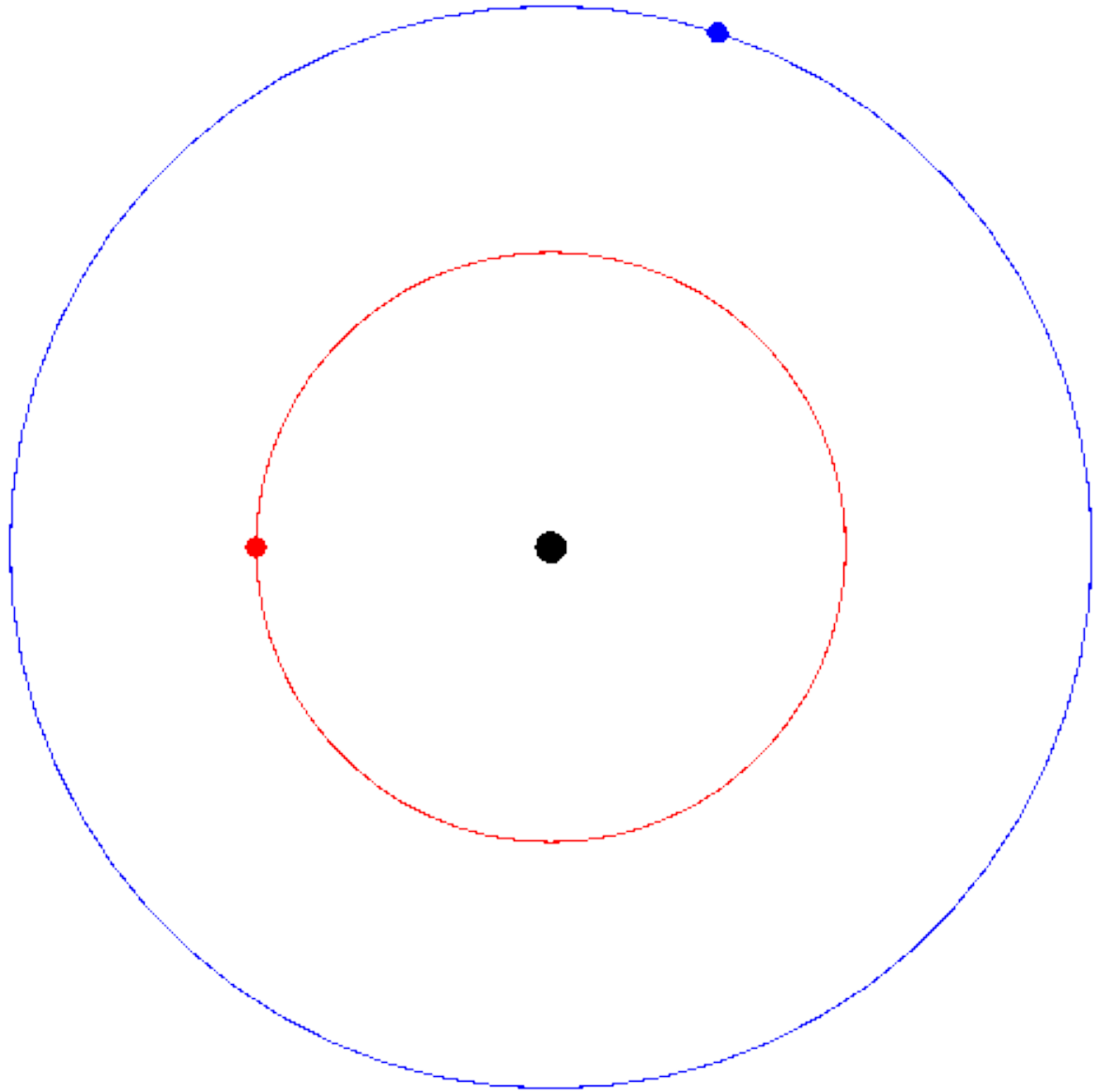


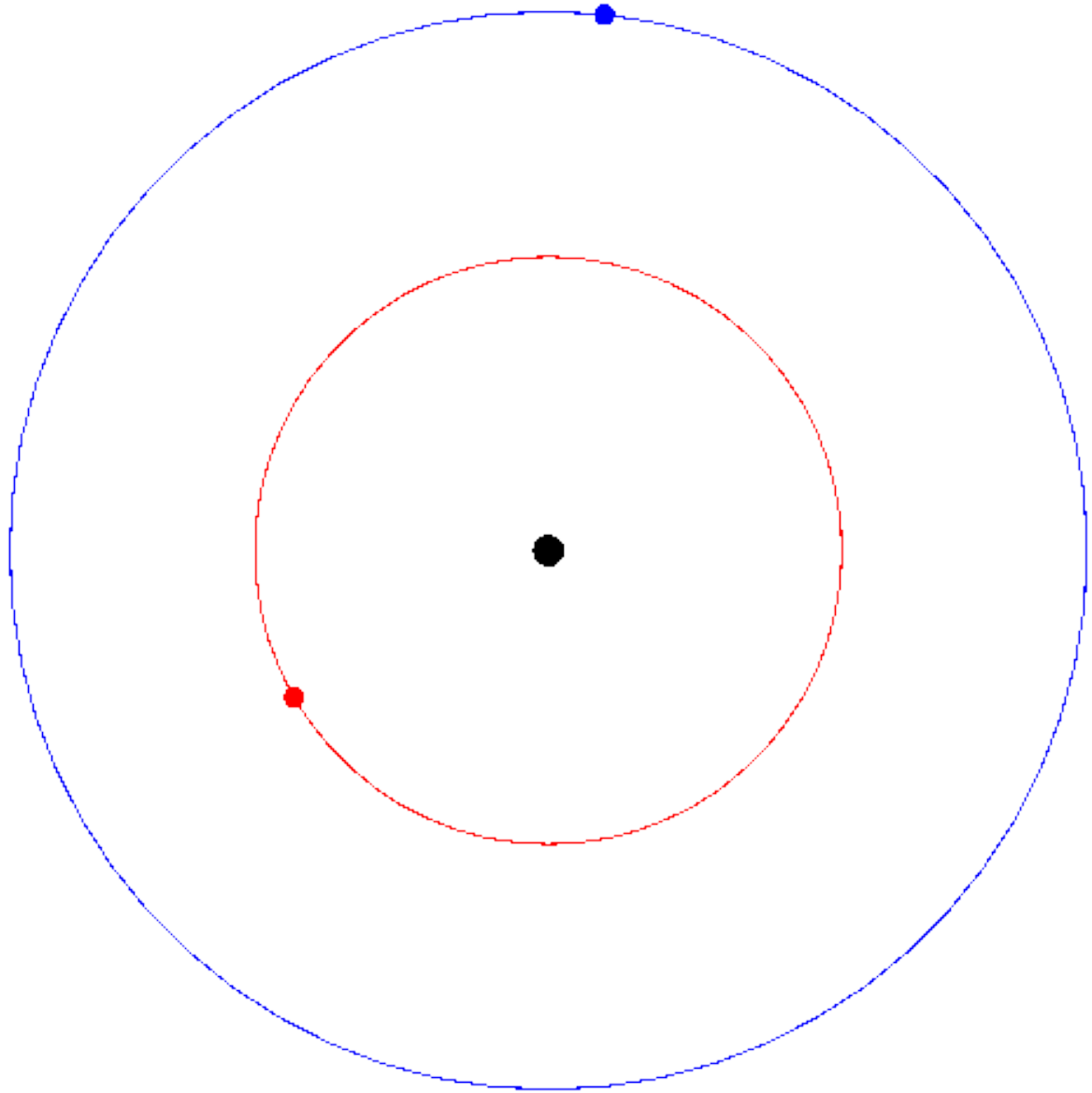


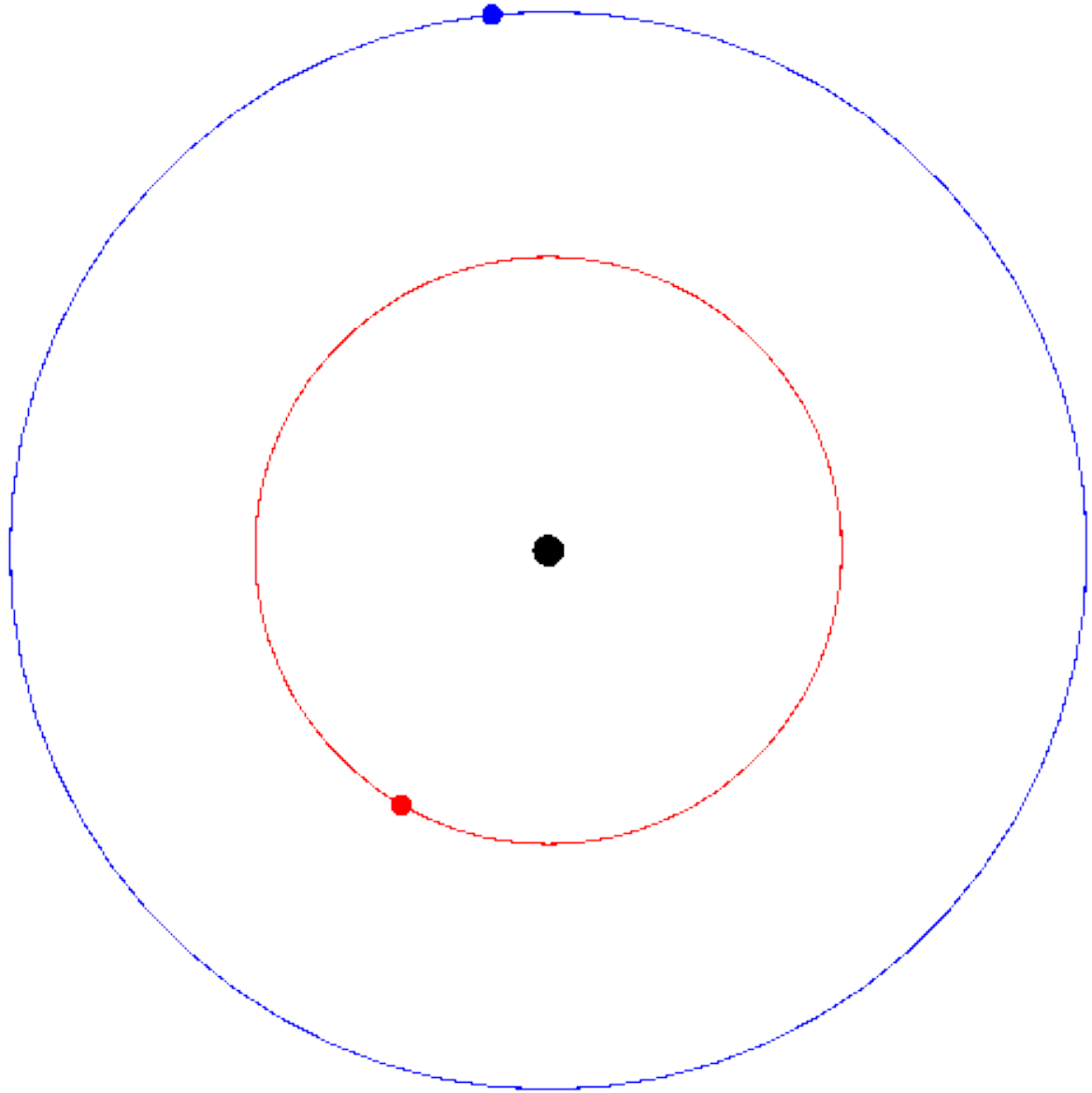


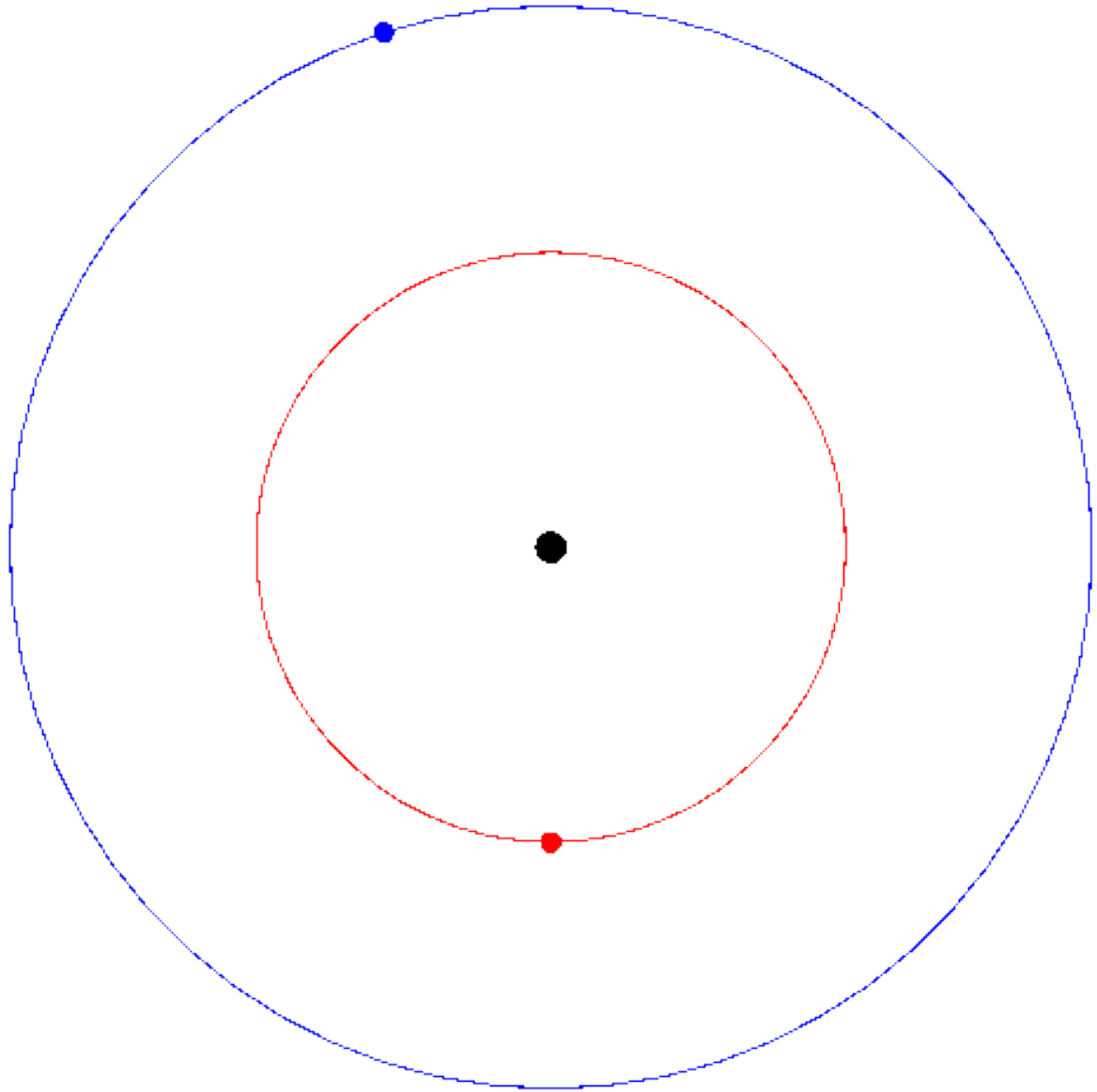


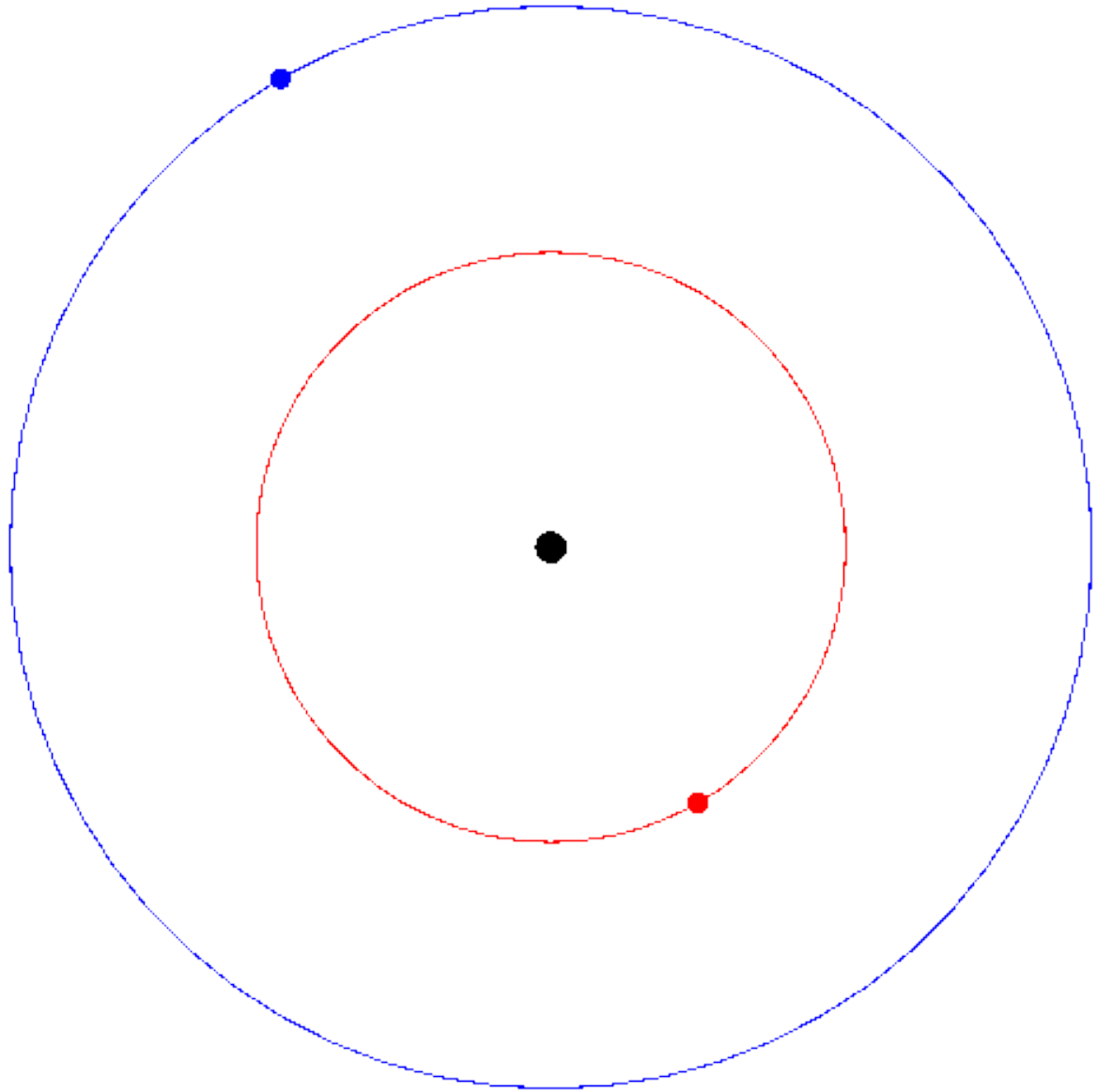


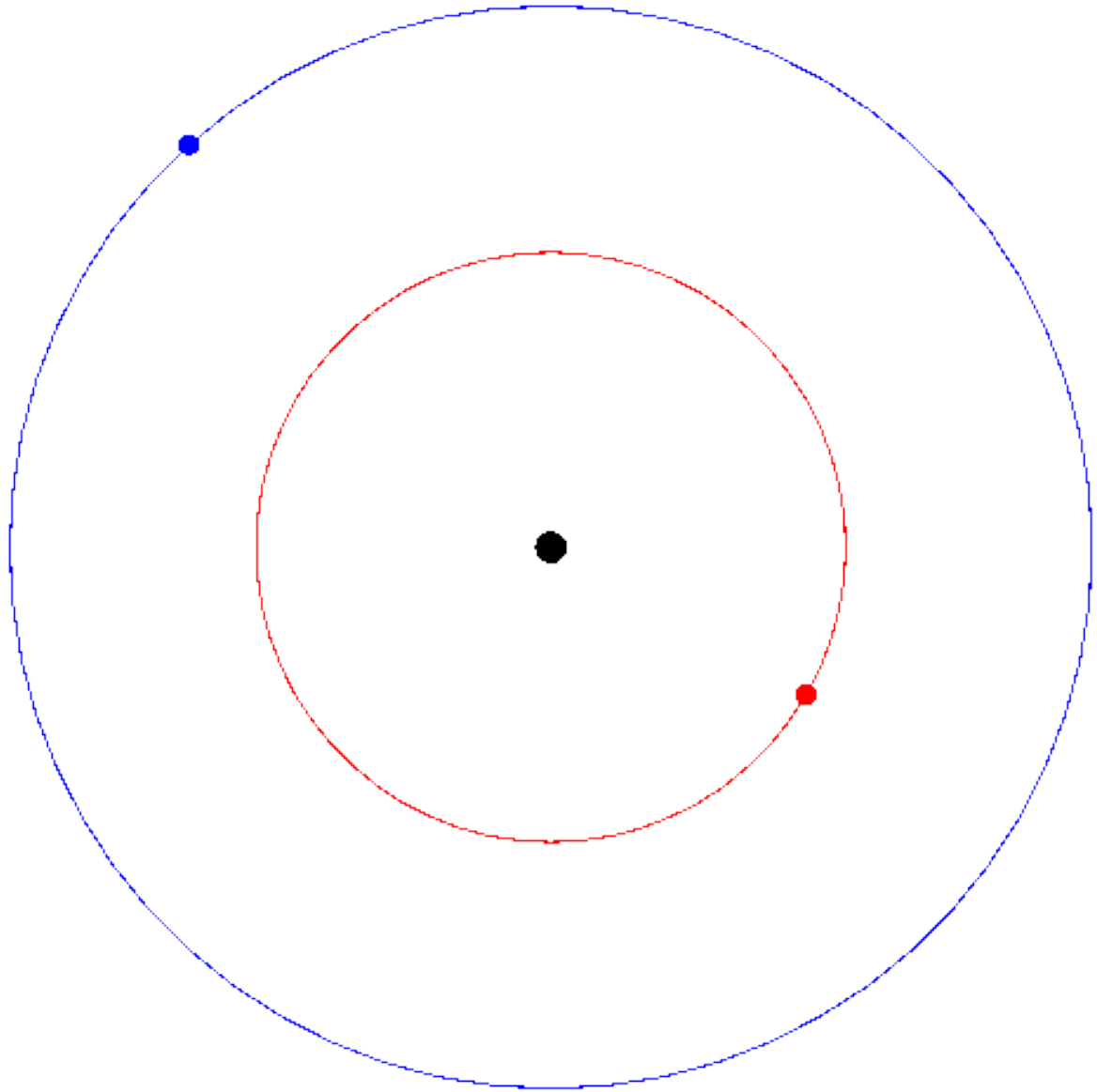


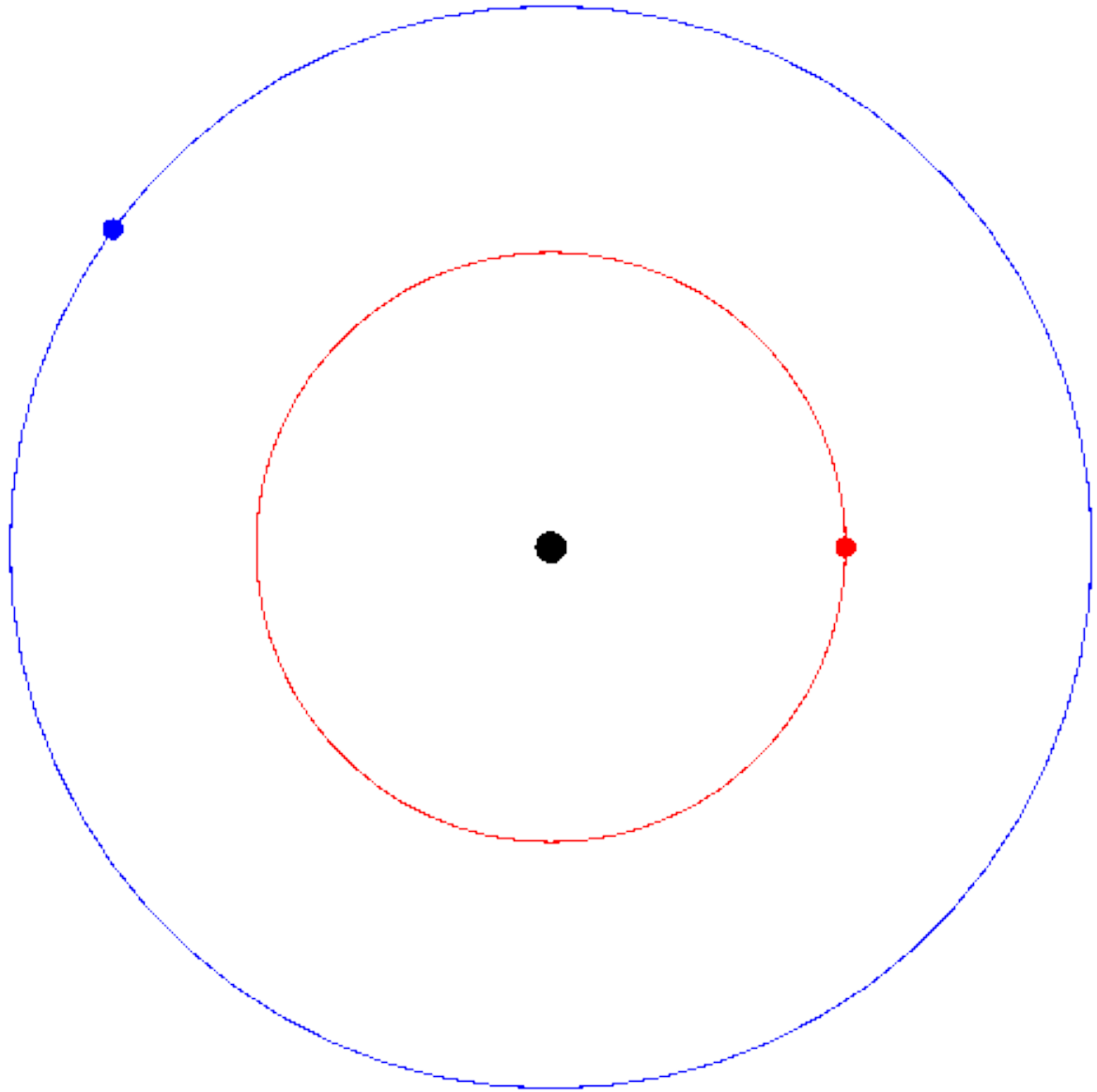


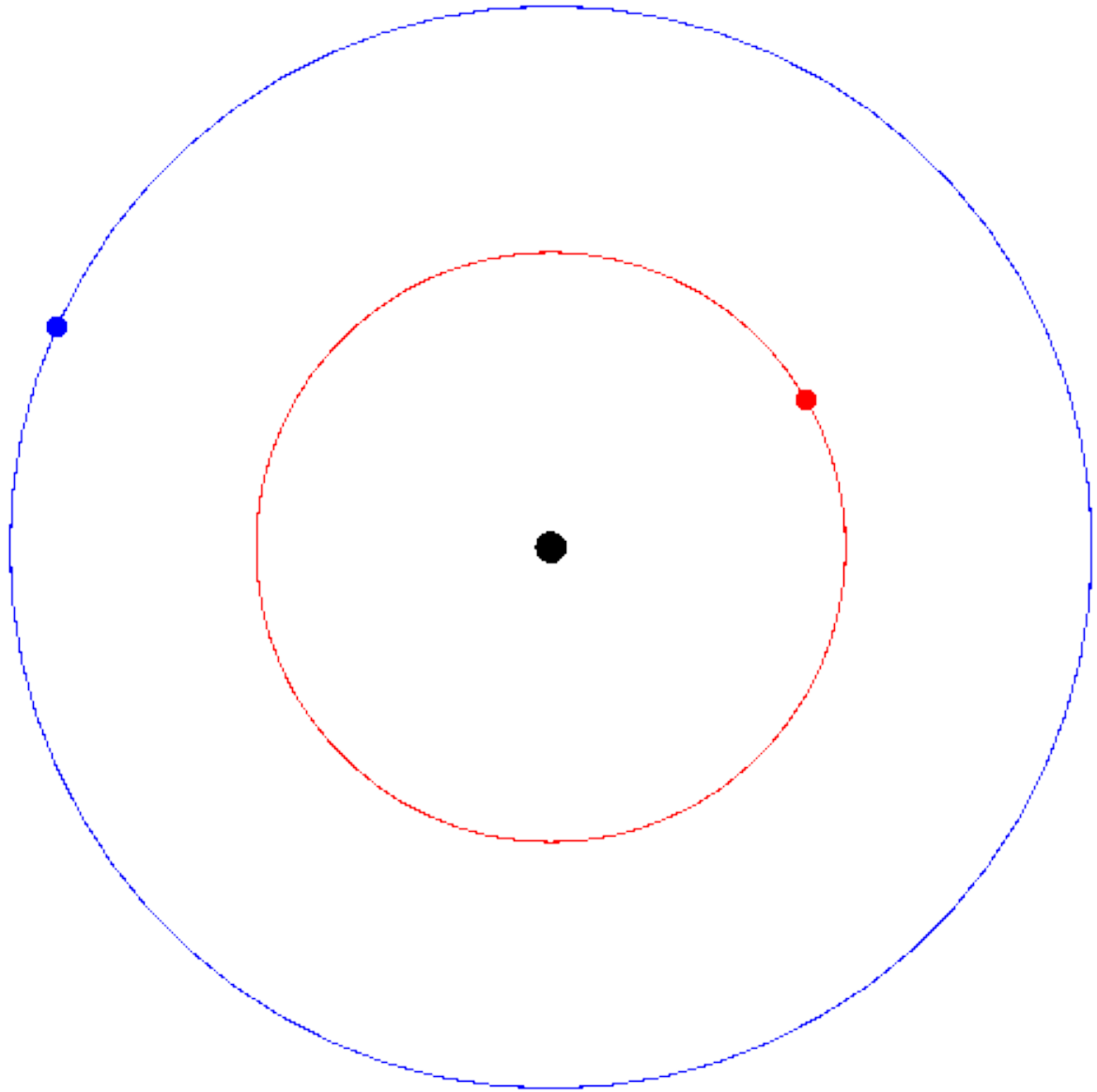


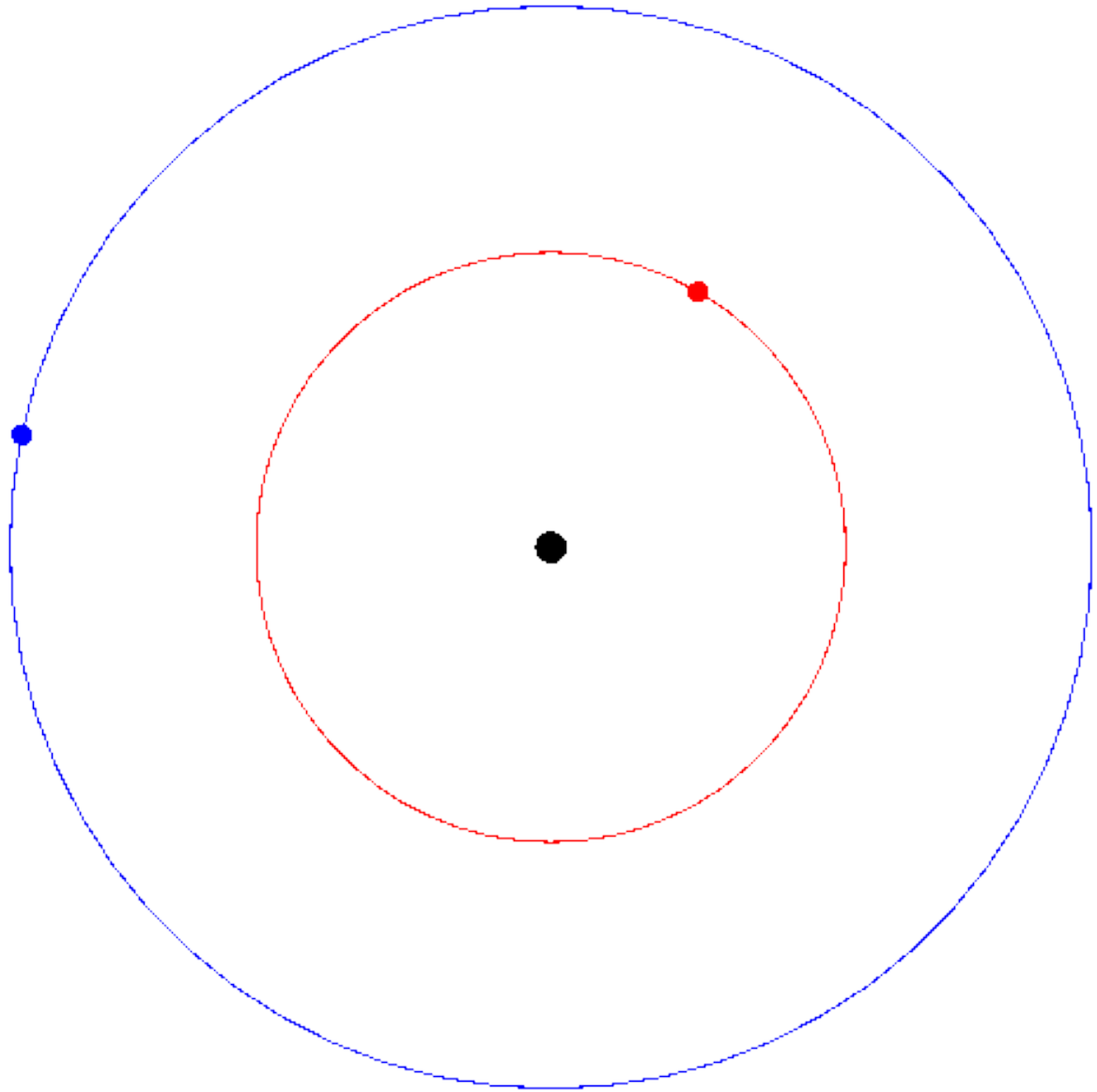


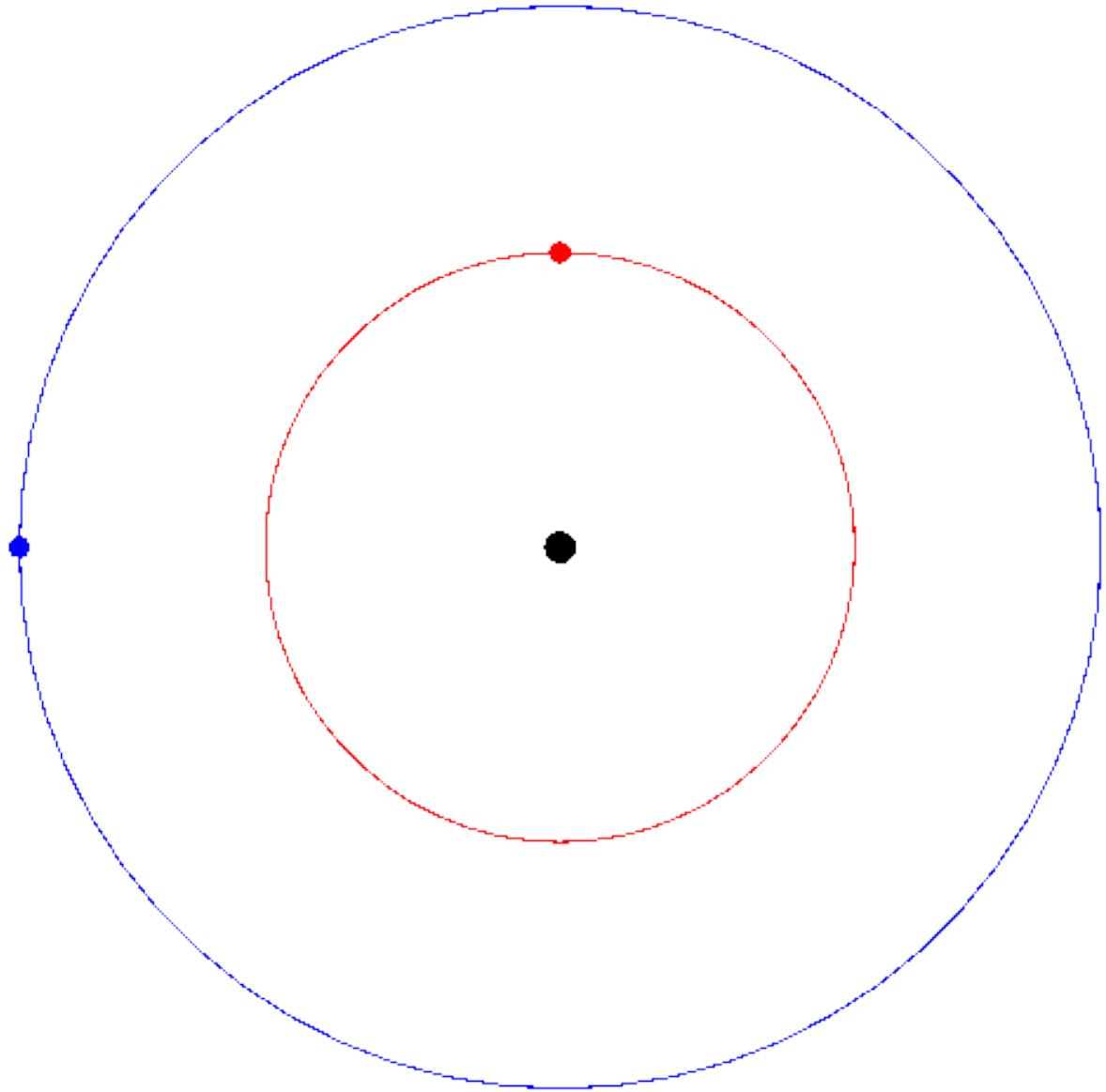


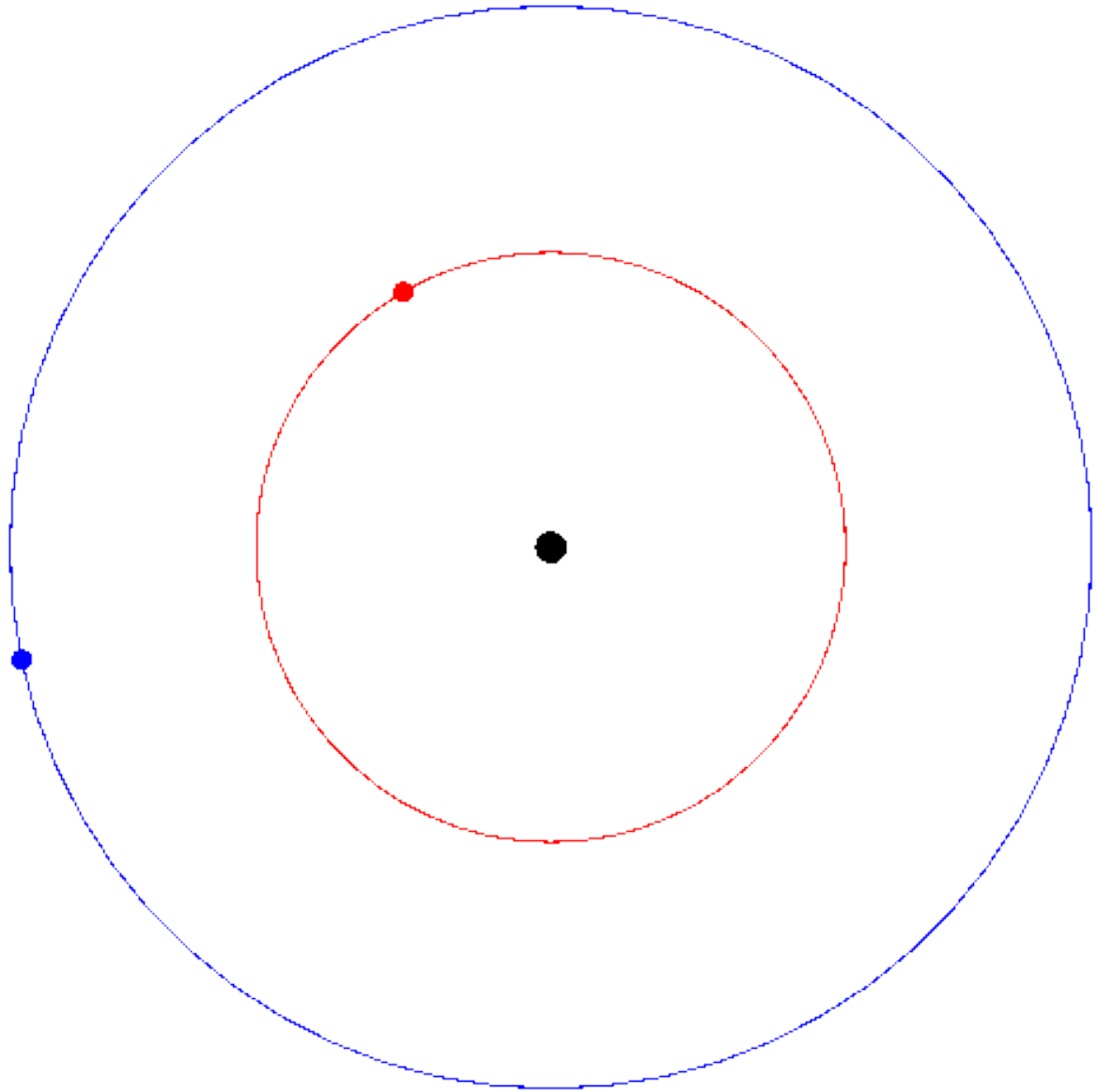


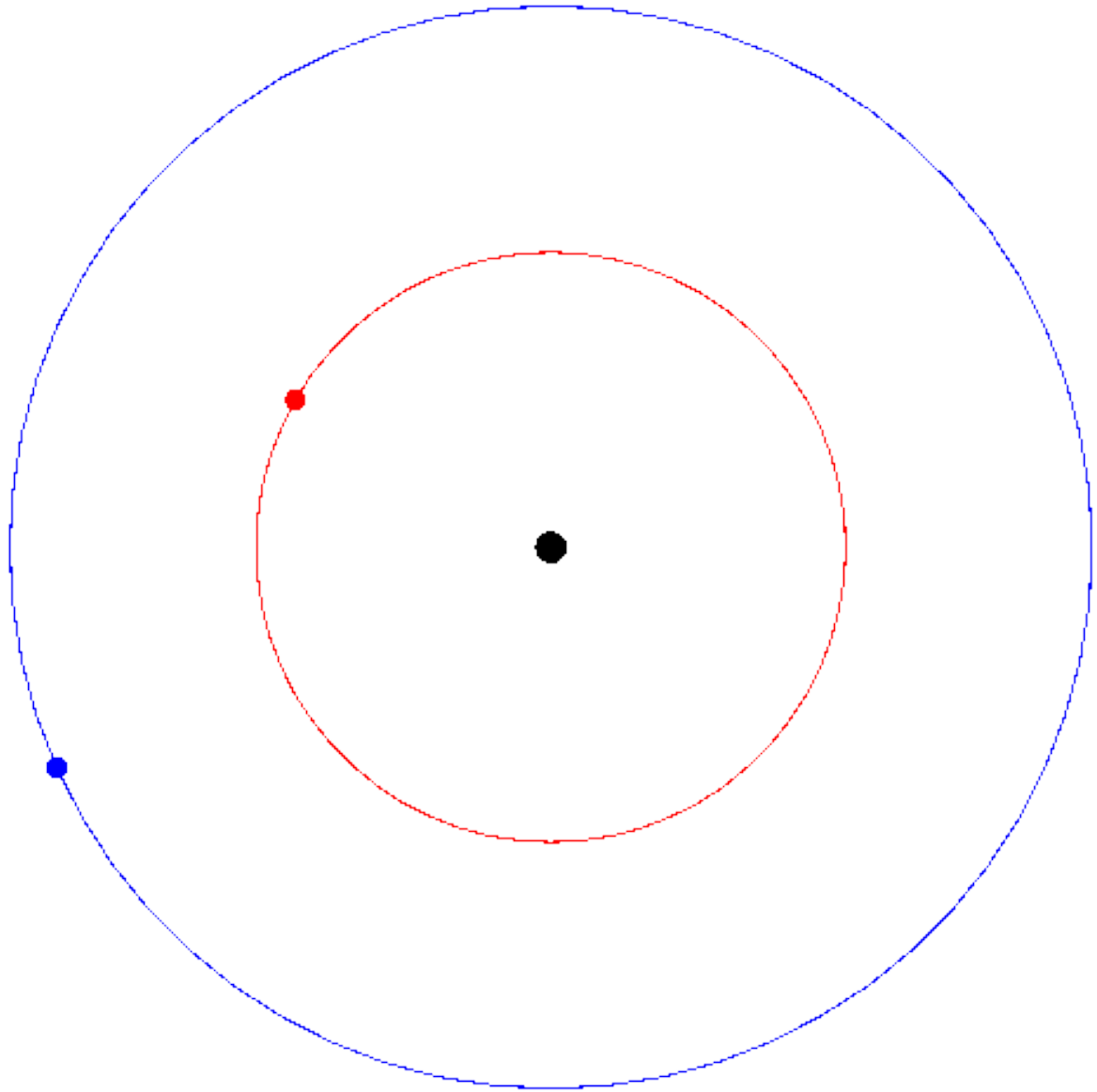


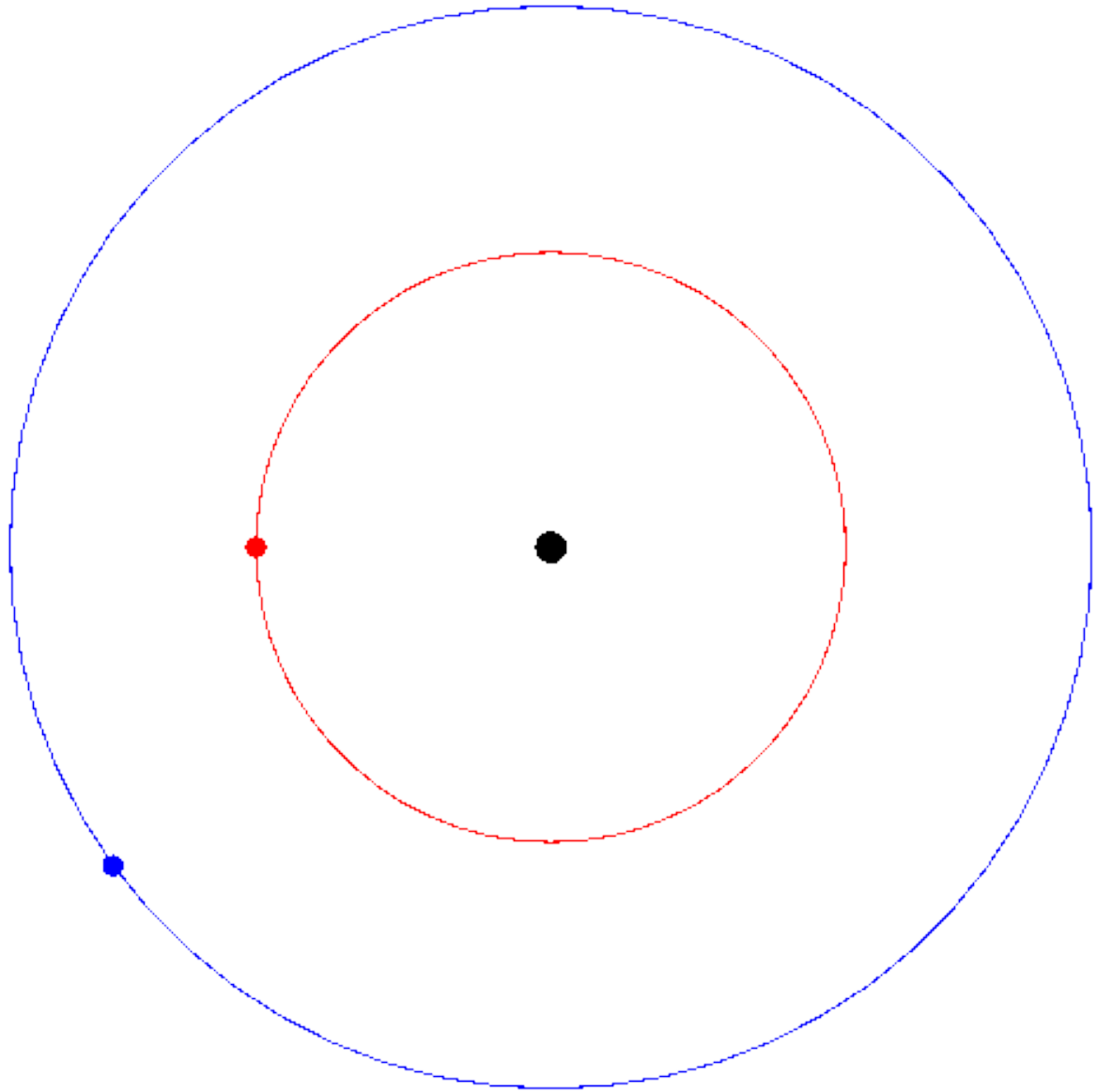


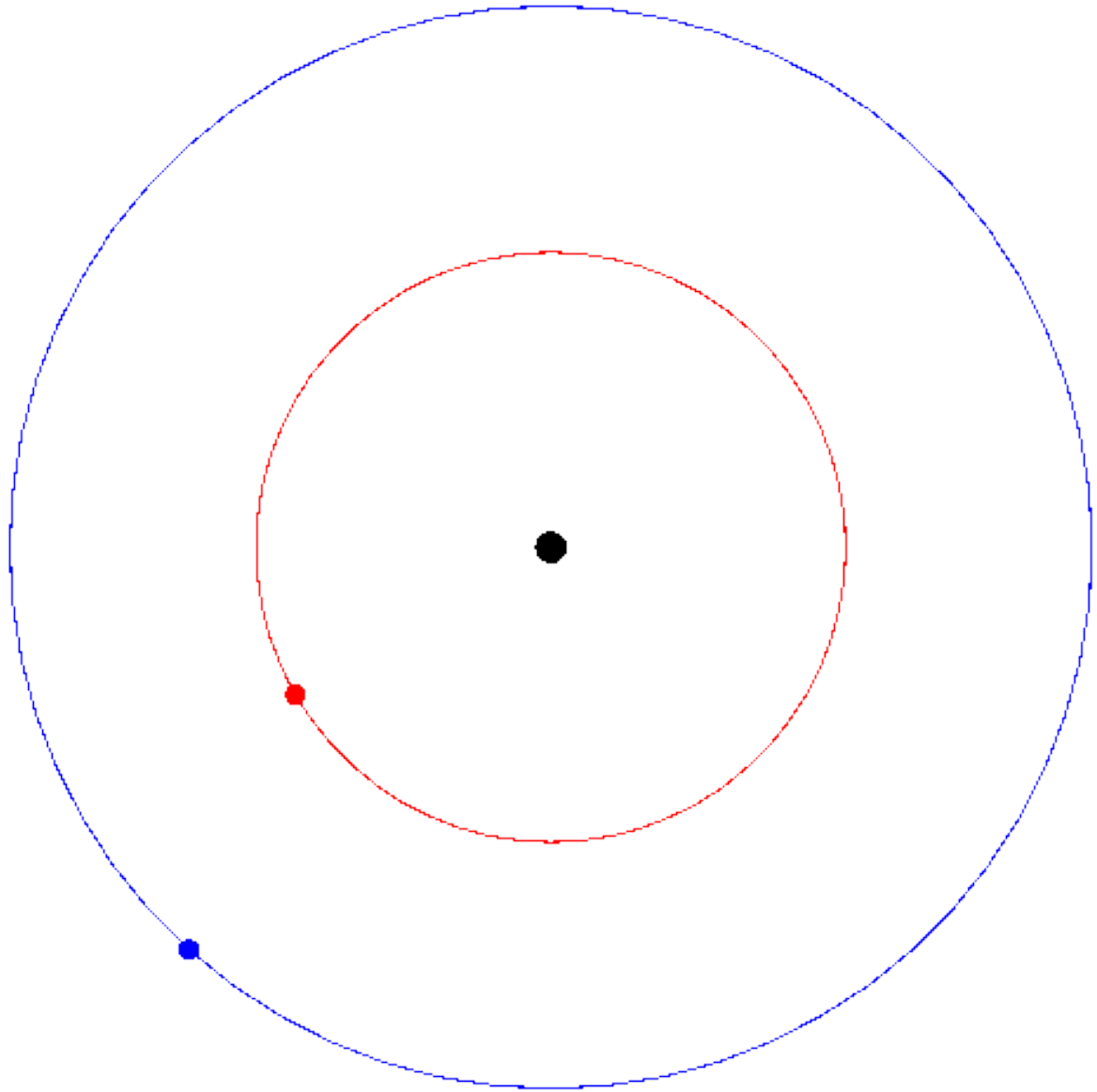


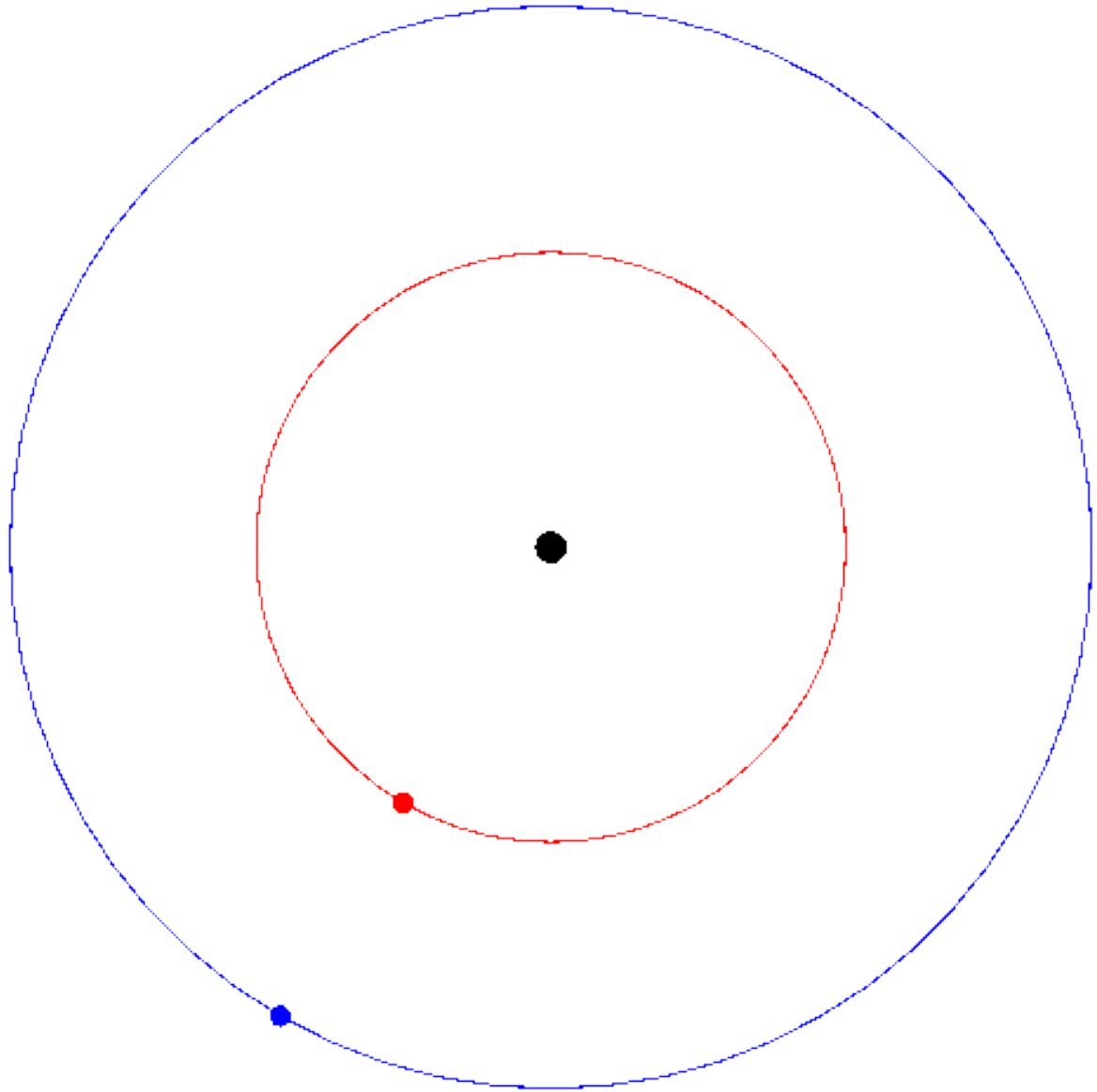


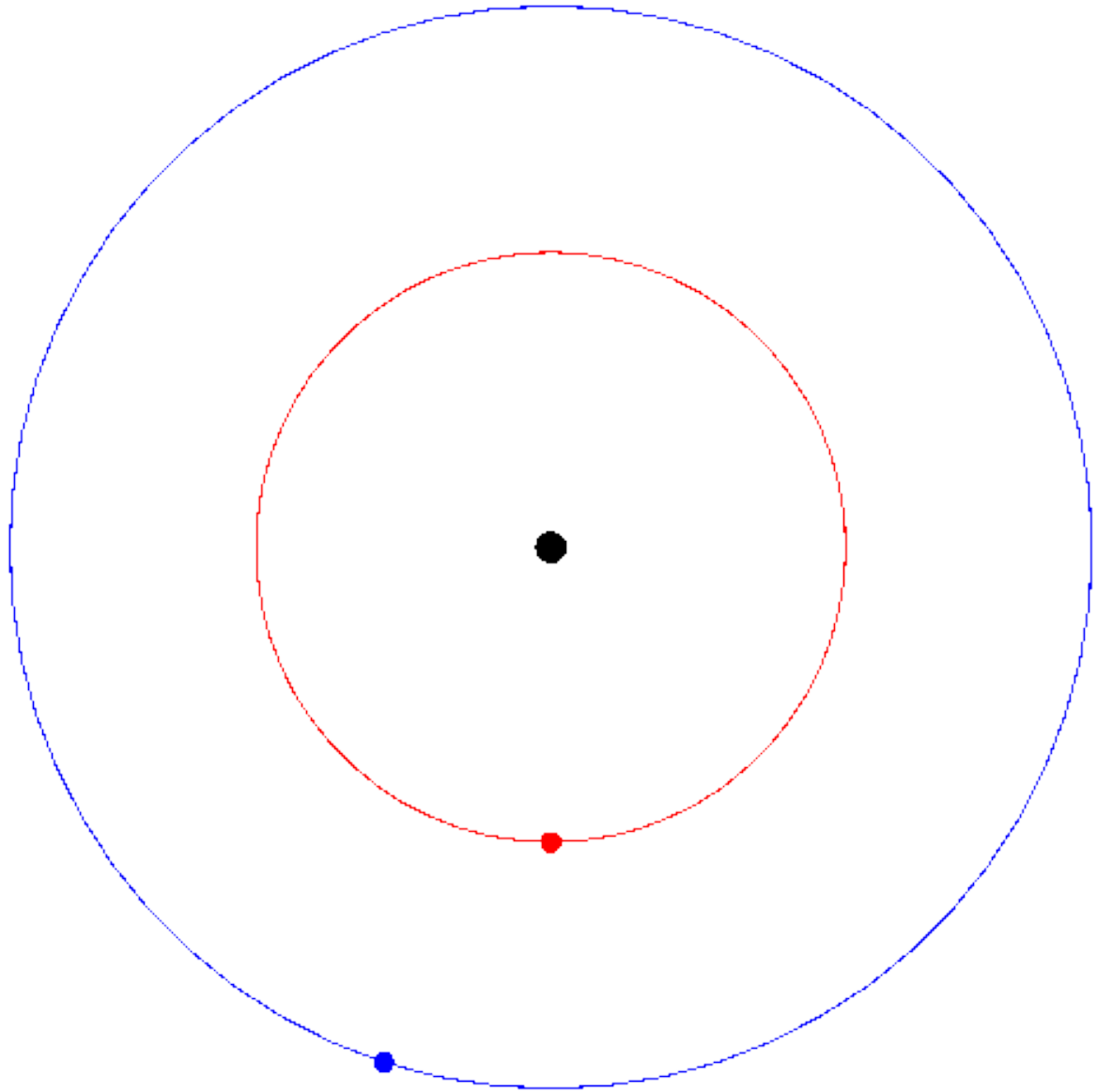


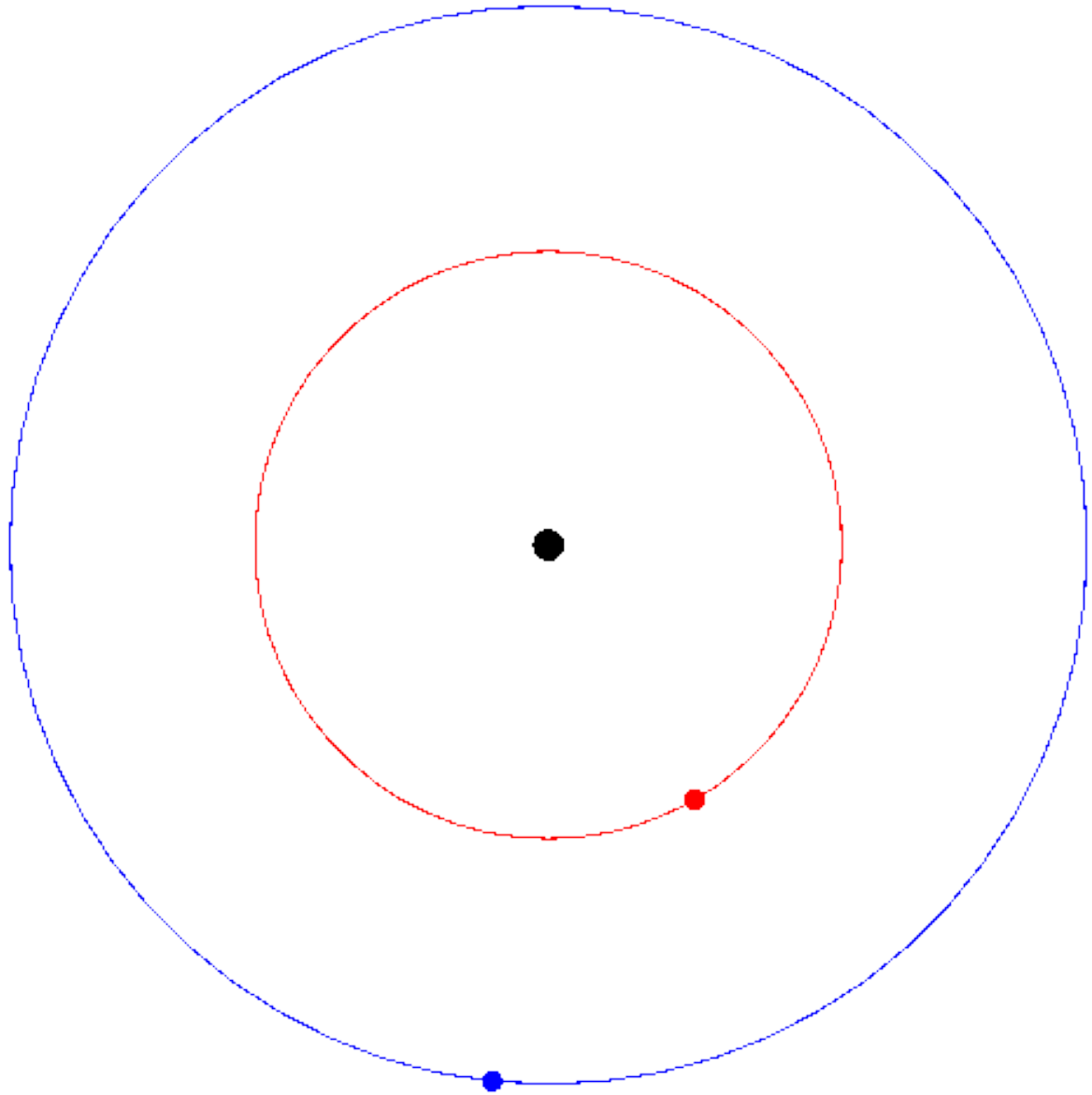


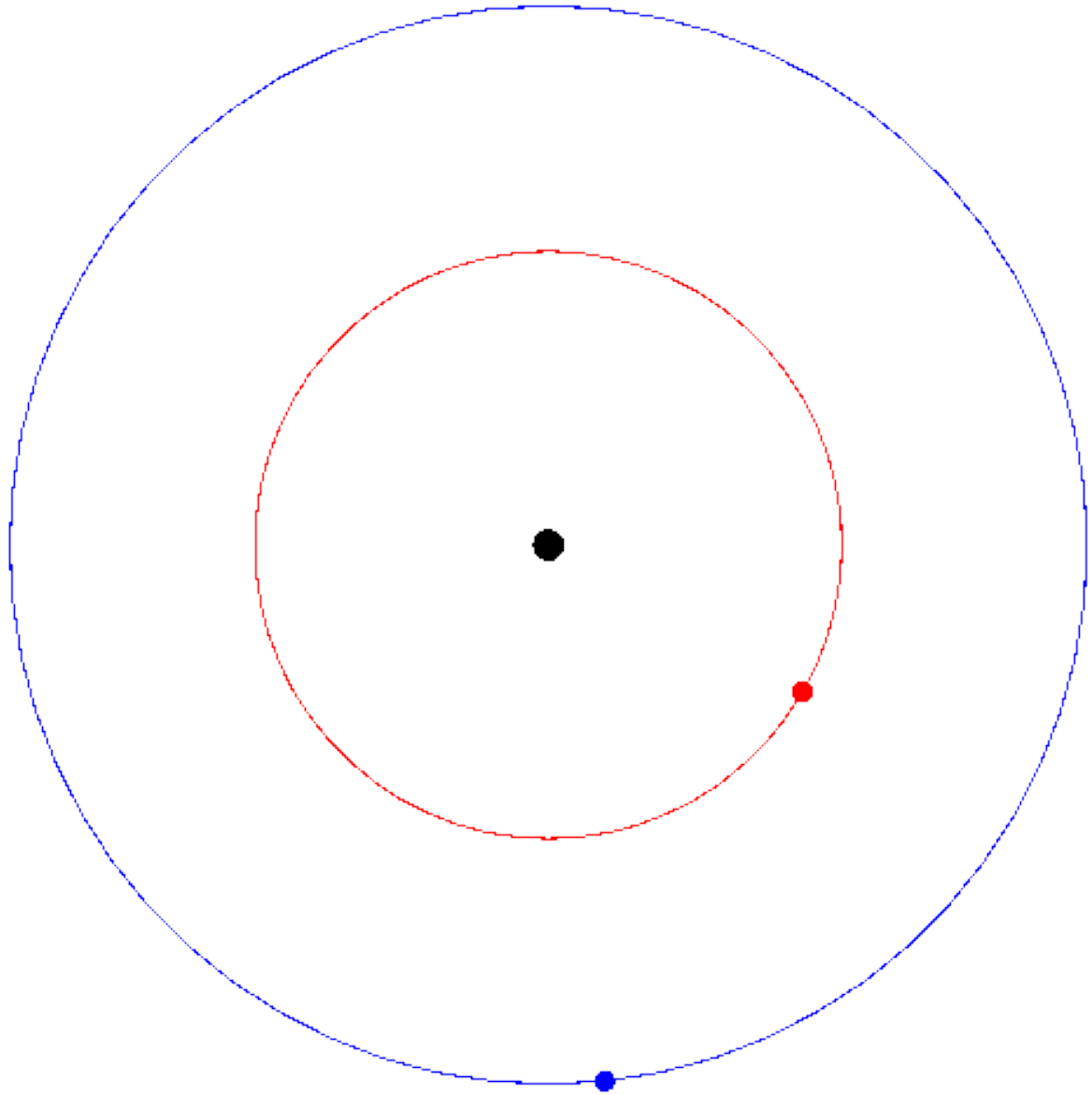


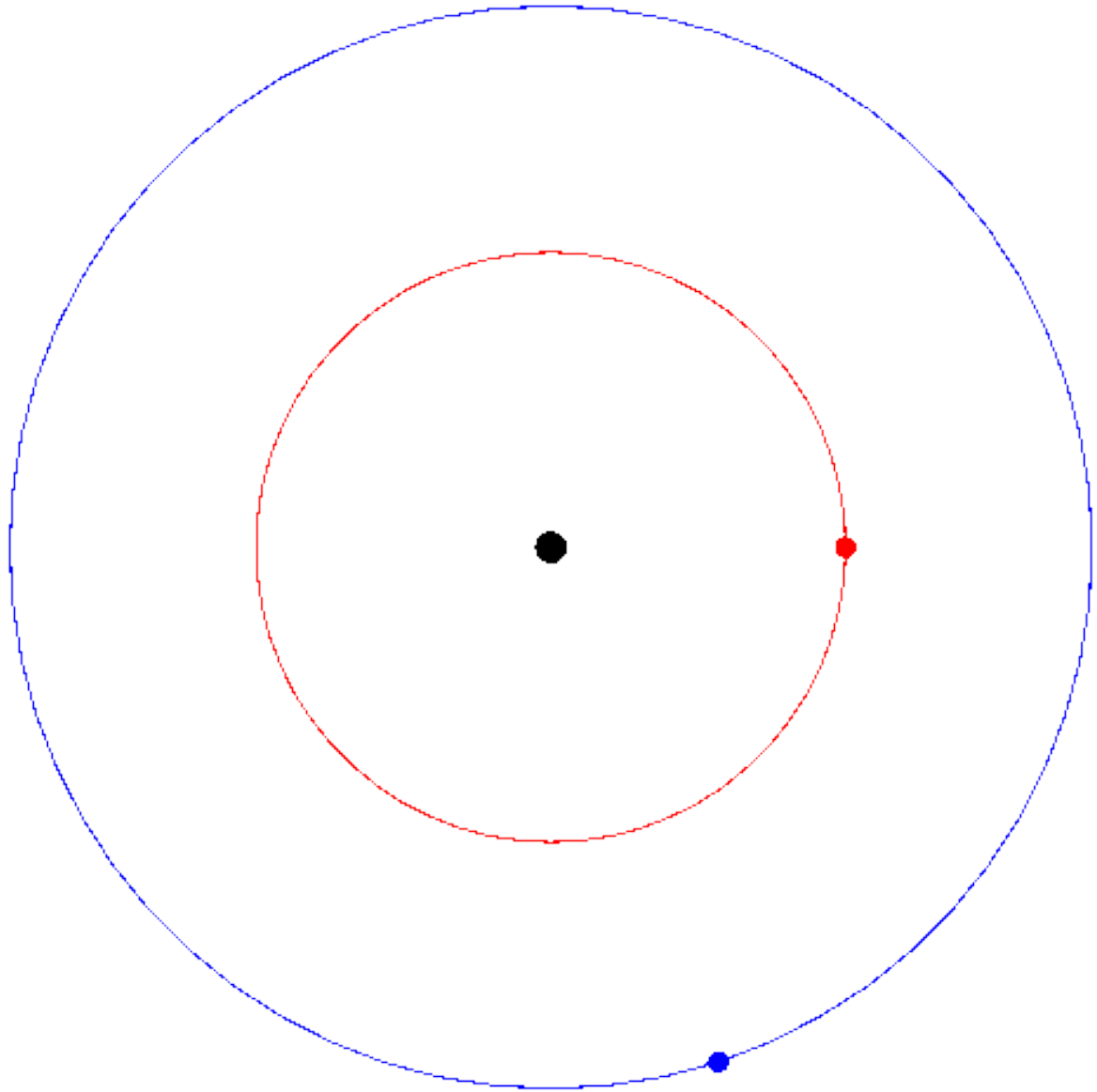


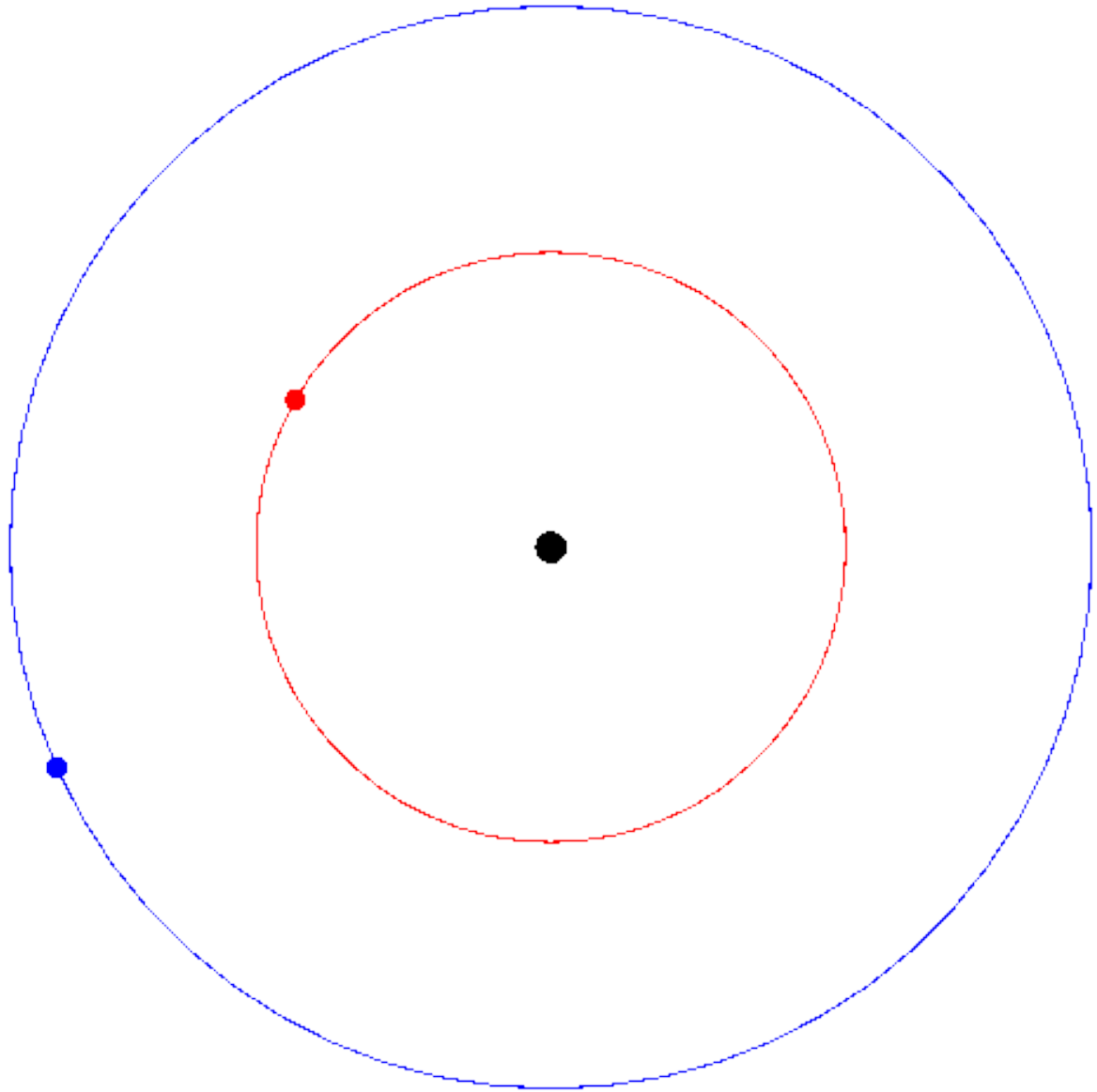






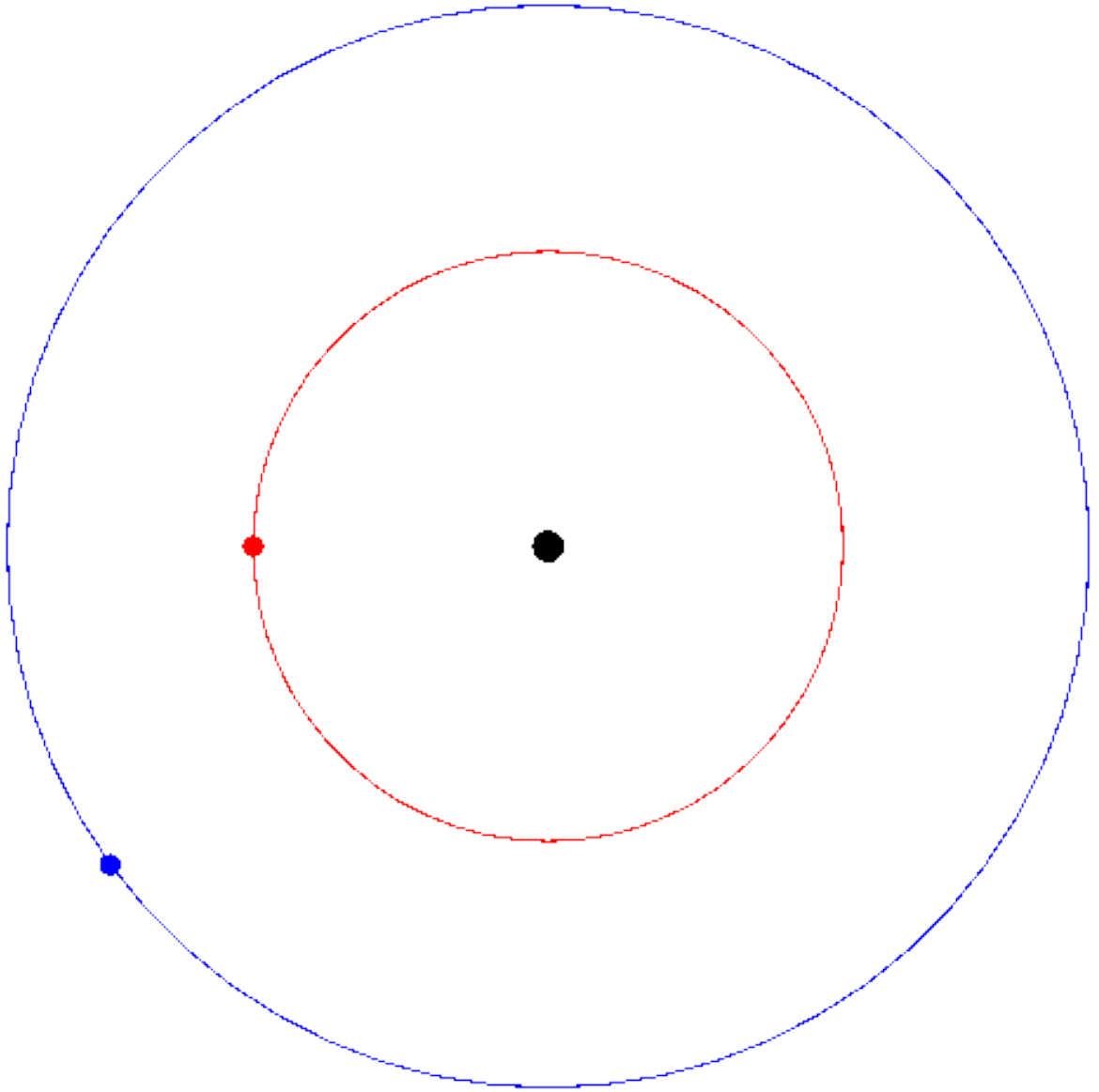






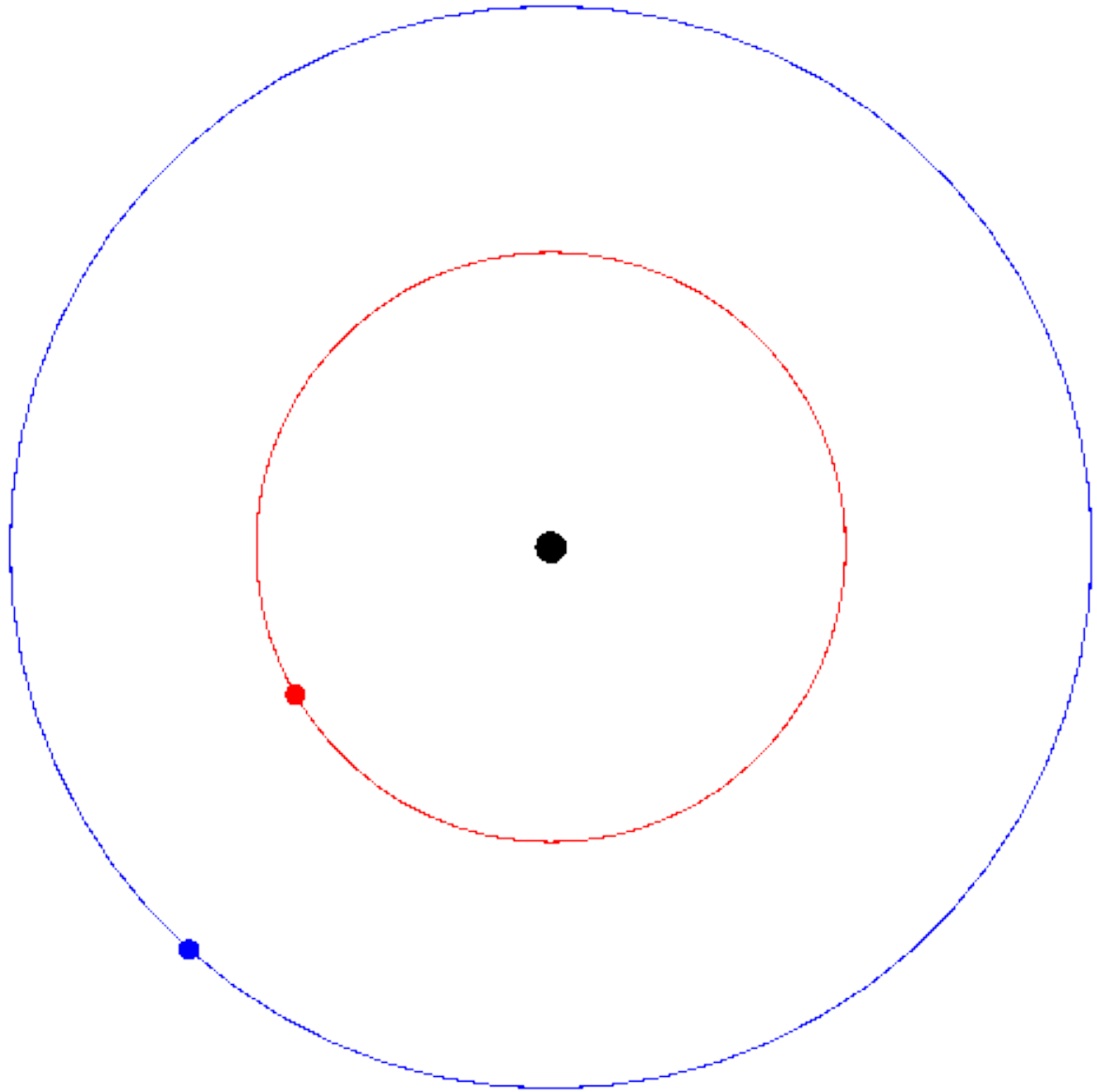
Configuration 1

A) Jupiter is speeding up and Saturn is slowing down
B) Jupiter is slowing down and Saturn is speeding up
C) Jupiter and Saturn are both speeding up
D) Jupiter and Saturn are both slowing down
E) Neither planet is changing speed



$M_{jup} / M_{sun} = 1/1000$

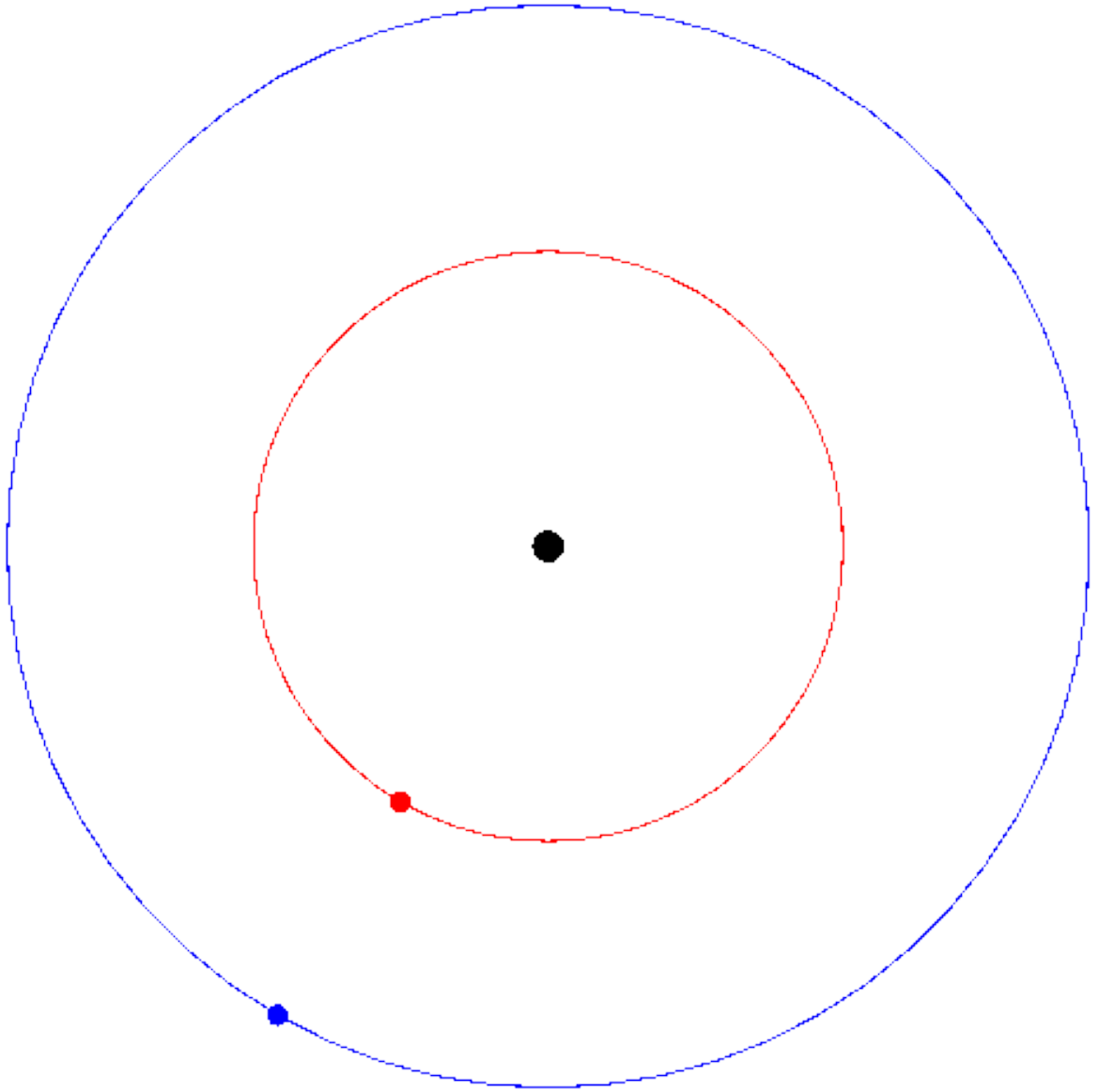
$M_{sat} / M_{sun} = 1/3500$

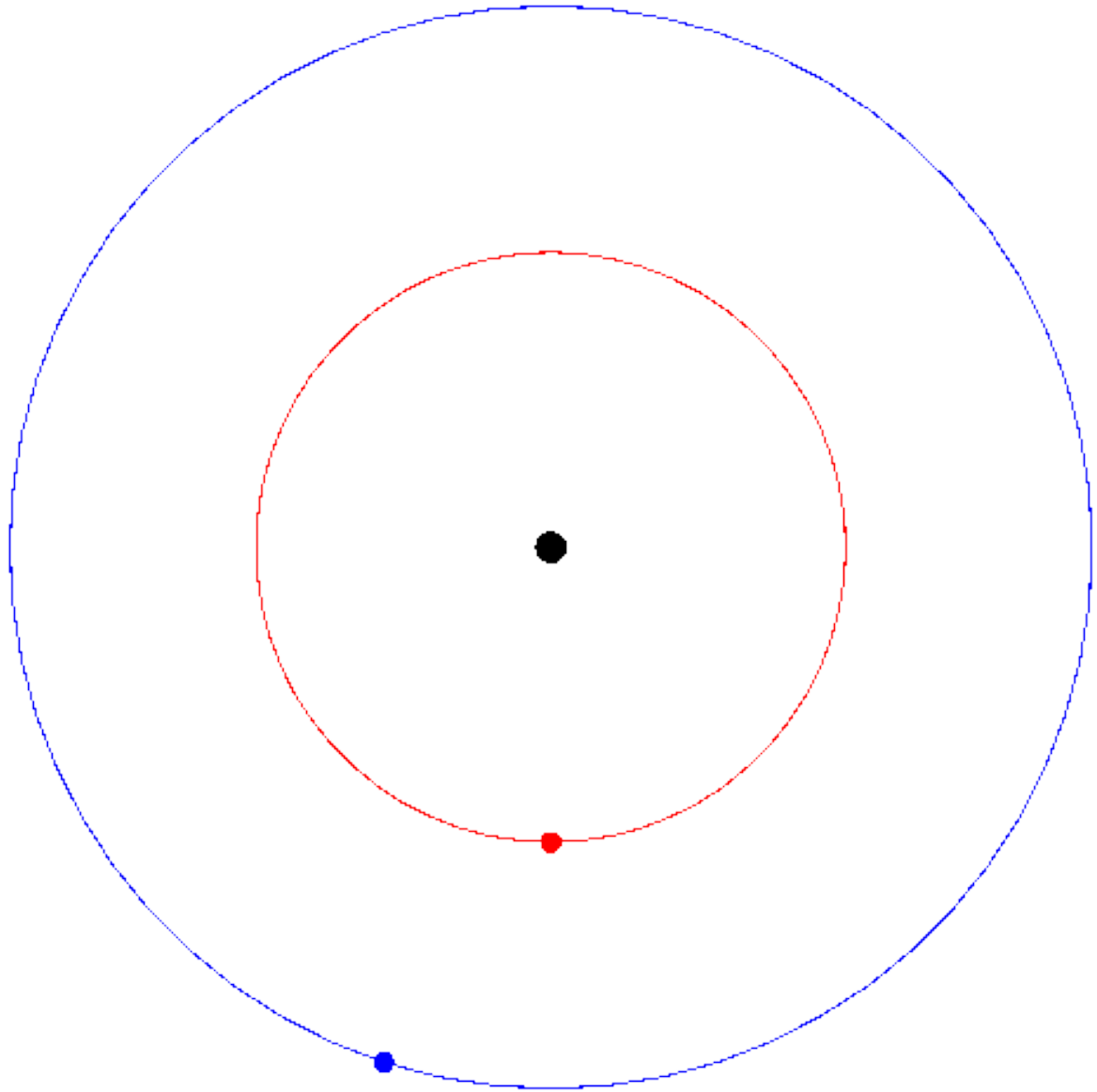


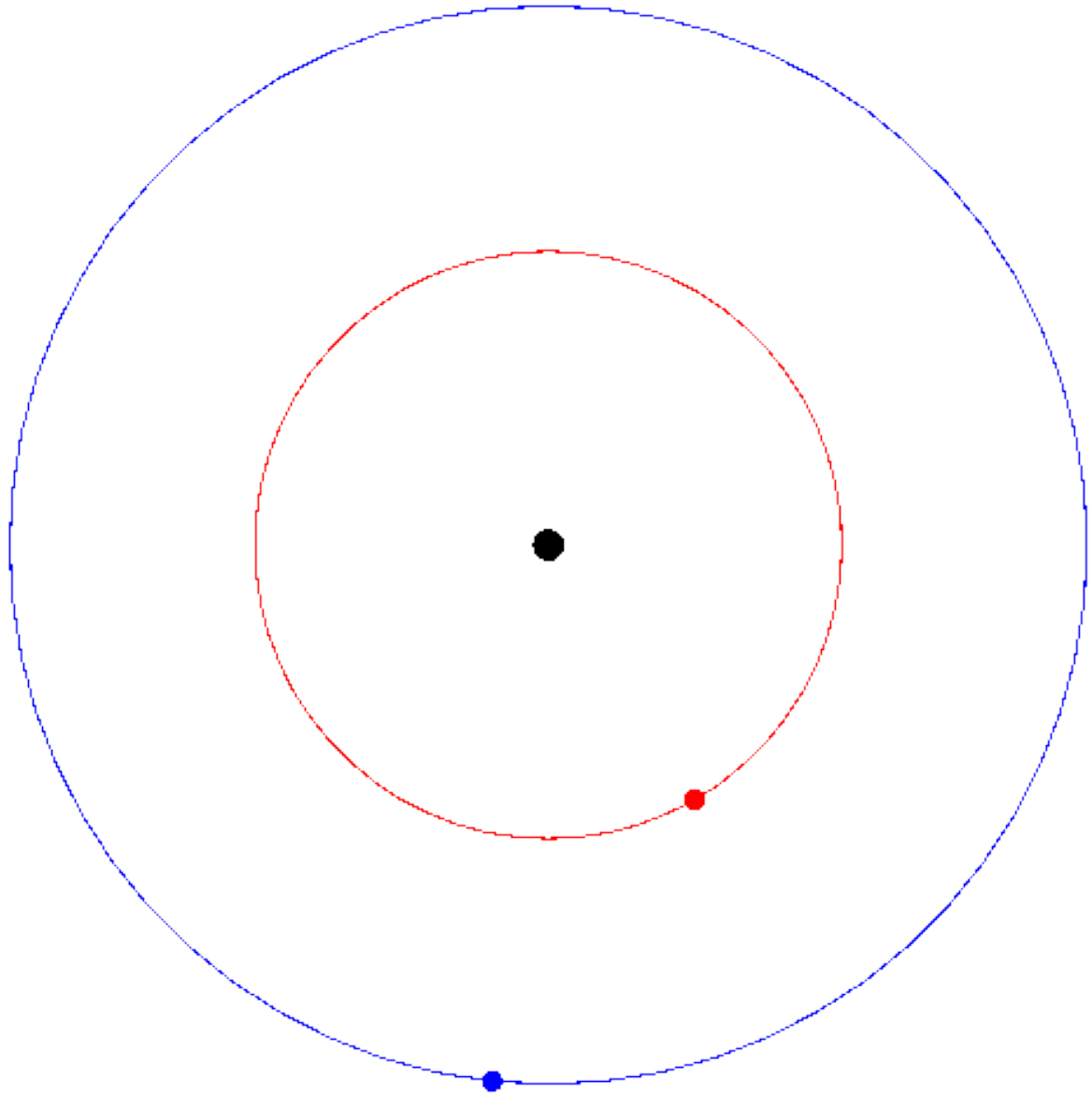
Configuration 2

Choose all that apply

A) Jupiter is moving faster than its average orbital speed
B) Jupiter is moving slower than its average orbital speed
C) Saturn is moving faster than its average orbital speed
D) Saturn is moving slower than its average orbital speed
E) Both planets are moving at their average orbital speed

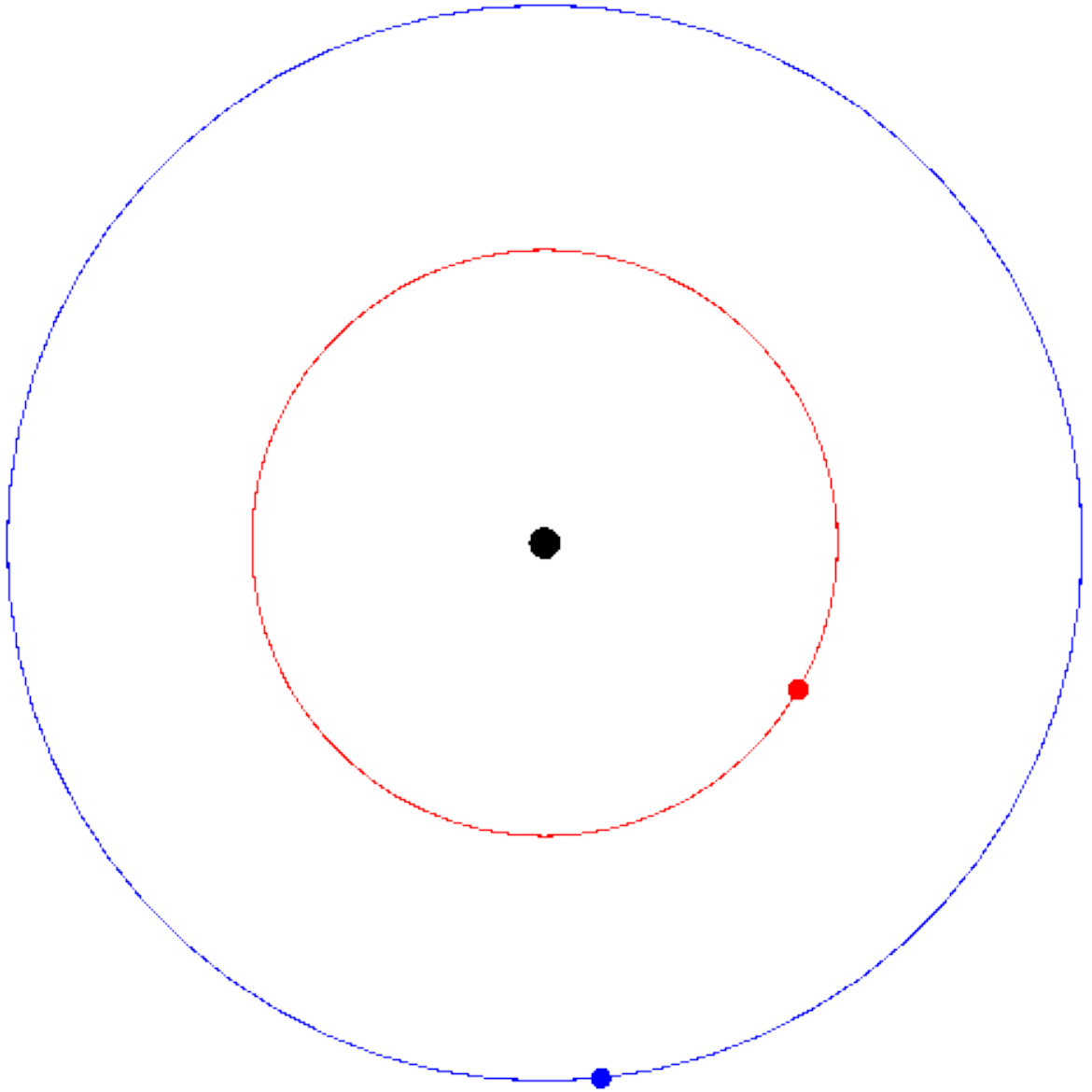






Configuration 3

A) Jupiter is speeding up and Saturn is slowing down
B) Jupiter is slowing down and Saturn is speeding up
C) Jupiter and Saturn are both speeding up
D) Jupiter and Saturn are both slowing down
E) Neither planet is changing speed

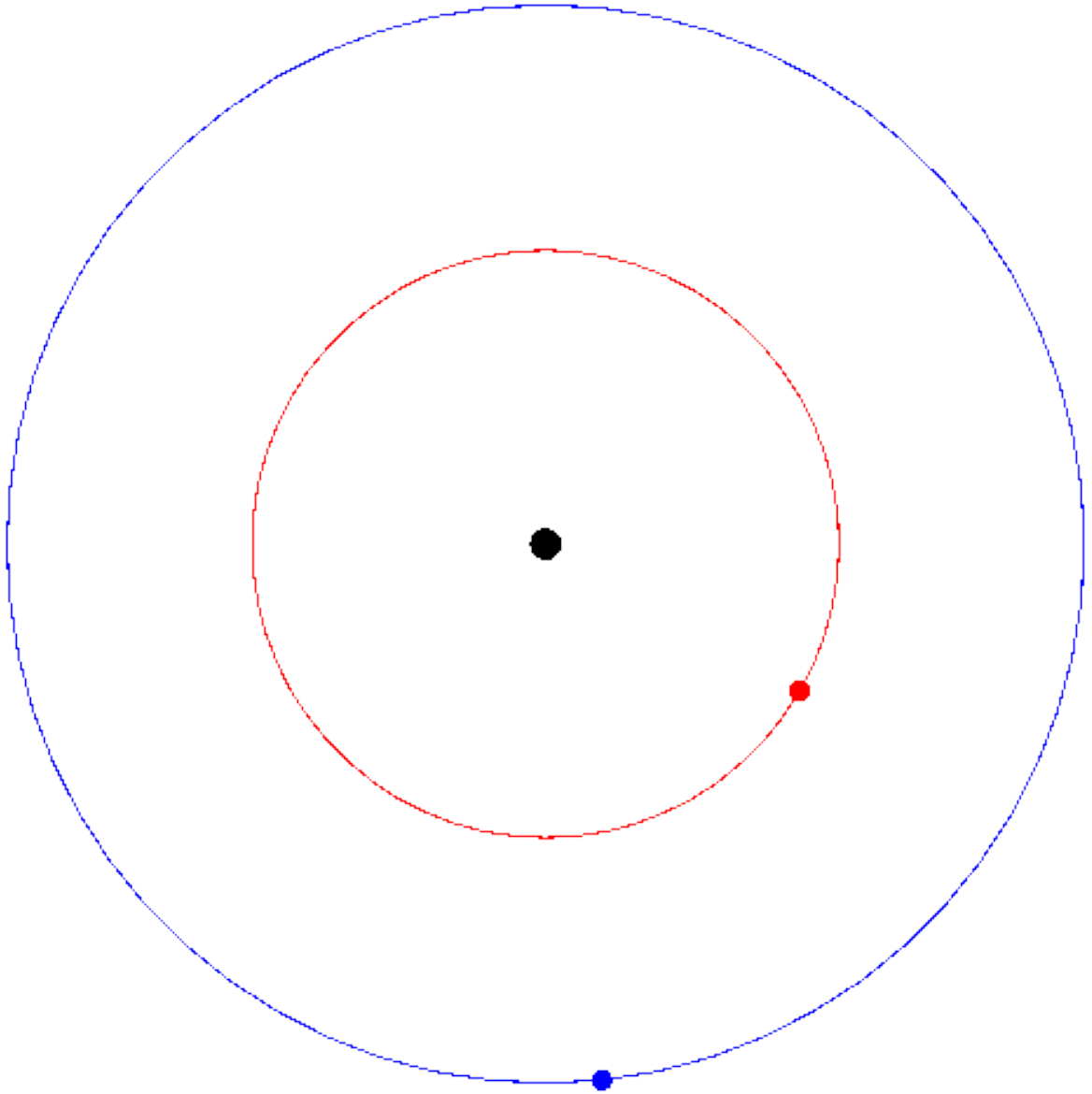


$M_{jup} / M_{sun} = 1/1000$

$M_{sat} / M_{sun} = 1/3500$

Saturn's average orbital speed is about 10 km/sec.
The gravity of Jupiter probably changes Saturn's orbital speed by roughly:

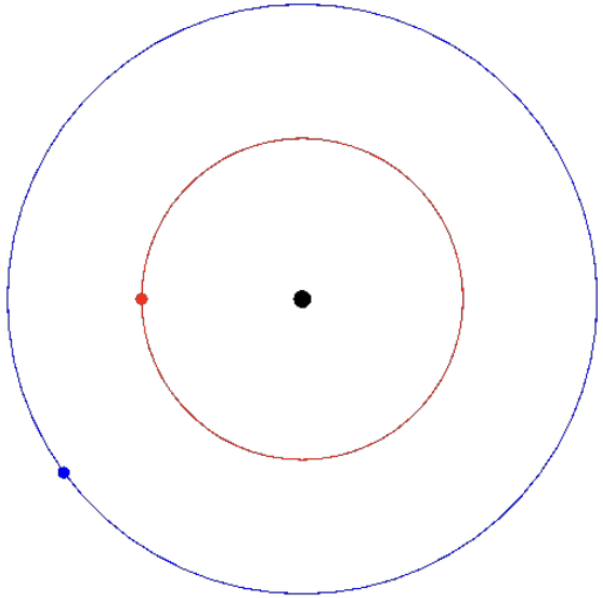
A) 1 km/sec
B) 10 meters/sec
C) 10 millimeters/sec
D) No change at all



$M_{jup} / M_{sun} = 1/1000$

$M_{sat} / M_{sun} = 1/3500$

Configuration 1

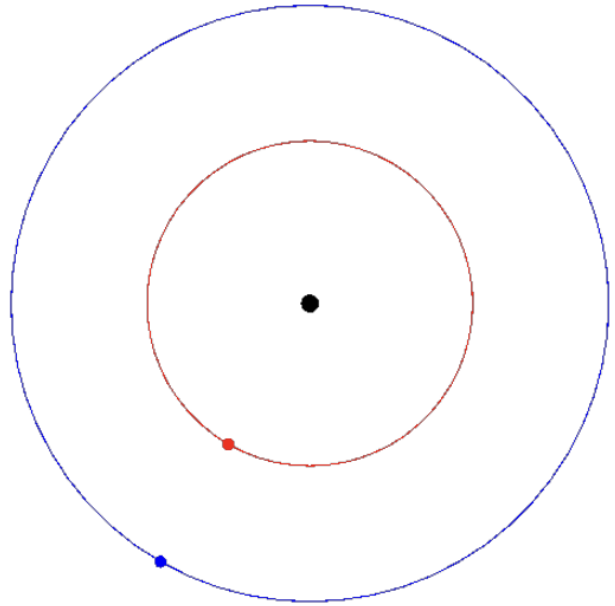


$M_{jup} / M_{sun} = 1/1000$

$M_{sat} / M_{sun} = 1/3500$

A) Jupiter is speeding up and Saturn is slowing down
B) Jupiter is slowing down and Saturn is speeding up
C) Jupiter and Saturn are both speeding up
D) Jupiter and Saturn are both slowing down
E) Neither planet is changing speed

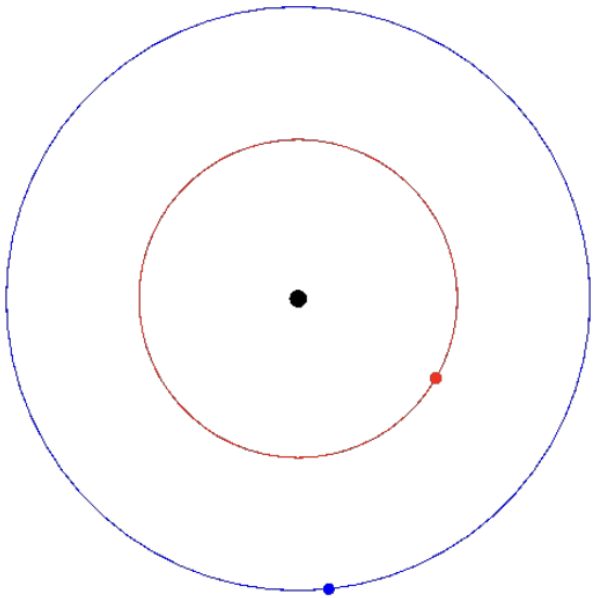
Configuration 2



Choose all that apply

A) Jupiter is moving faster than its average orbital speed
B) Jupiter is moving slower than its average orbital speed
C) Saturn is moving faster than its average orbital speed
D) Saturn is moving slower than its average orbital speed
E) Both planets are moving at their average orbital speed

Configuration 3



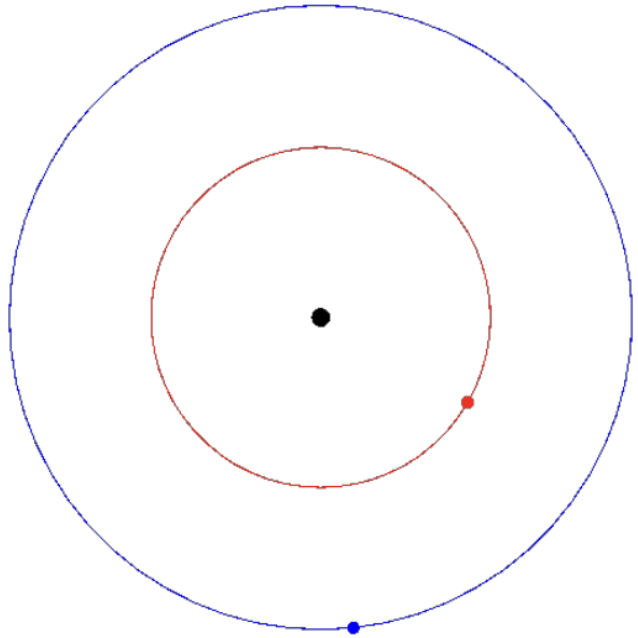
$M_{jup} / M_{sun} = 1/1000$

$M_{sat} / M_{sun} = 1/3500$

A) Jupiter is speeding up and Saturn is slowing down
B) Jupiter is slowing down and Saturn is speeding up
C) Jupiter and Saturn are both speeding up
D) Jupiter and Saturn are both slowing down
E) Neither planet is changing speed

Saturn's average orbital speed is about 10 km/sec.
The gravity of Jupiter probably changes Saturn's orbital speed by roughly:

A) 1 km/sec
B) 10 meters/sec
C) 10 millimeters/sec
D) No change at all



$M_{jup} / M_{sun} = 1/1000$

$M_{sat} / M_{sun} = 1/3500$