HM3 FINAL REVIEW Name_____

Describe the end behavior of each function.

1) $f(x) = -x^3 + 2x^2 + 2$

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

Simplify each expression.

3) $\dfrac{2x^2}{x^2 + 8x - 9} \div \dfrac{5}{5x + 45}$

4) $\dfrac{n^2 + 2n - 35}{9} \cdot \dfrac{n + 2}{n^2 + 2n - 35}$

5) $\dfrac{9k}{9} \div \dfrac{9k}{9k + 45}$

6) $\dfrac{27r + 81}{r - 8} \div \dfrac{27r + 81}{9}$

State the possible number of real zeros, the possible number of positive and negative zeros, and the possible rational zeros for each function.

7) $f(x) = 3x^3 + 10x^2 + 12x + 3$

8) $f(x) = 5x^3 - x^2 - 5x + 1$

Simplify each expression.

9) $\dfrac{2}{2v^2 - 8v + 6} - \dfrac{5}{3}$

10) $\dfrac{6}{a - 5} - \dfrac{4a}{a + 4}$

Use the information provided to write the standard form equation of each circle.

11) Center: $(3, -2)$
Radius: 5

12) Center: $(-3, -5)$
Circumference: 24π

13) Center: $(13, 12)$
Point on Circle: $(7, 12)$

14) $x^2 + y^2 + 14x - 22y + 134 = 0$

Write a polynomial function of least degree with integral coefficients that has the given zeros.

15) $0,\ -3,\ -\frac{4}{5}$

16) $-\frac{2}{5},\ -1,\ 2$

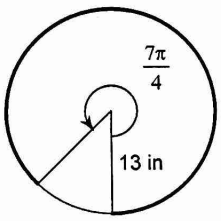
17) $1,\ \sqrt{3}$

18) $2,\ -3+3i$

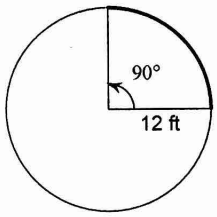
19) $-2+\sqrt{6},\ 3+2i$

Find the length of each arc.

20)

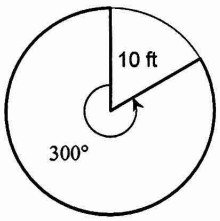


21)

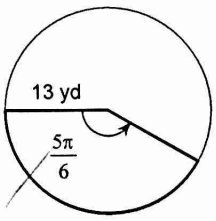


Find the area of each sector.

22)



23)



Find the reference angle.

24) $\frac{11\pi}{6}$

25) $-\frac{29\pi}{18}$

26) $285°$

27) $-545°$