3.5 WS 3

Determine the vertical and horizontal asymptotes of each rational function.

1. $F(x)=\dfrac{2x-x^2}{x^2+4x-5}$

2. $F(x)=\dfrac{4x+4x^2+x^3}{x^2-1}$

3. $G(x)=\dfrac{-2x}{x^3+2x^2-4x-8}$

4. $H(x)=\dfrac{4x-21}{5x^2+10}$

Find the slant asymptote of each rational function.

5. $F(x)=\dfrac{-5x^2+4x}{5x-4}$

6. $H(x)=\dfrac{-x^3+3x^2-x-3}{x^2+2x-3}$

7. $P(x)=\dfrac{6-7x+x^3}{2+x^2}$

Use Descartes' Rule of Signs to state the number of possible positive and negative real zeros of each polynomial function.

8. $f(x)=x^4-2x^3+4x-8$

9. $h(x)=3x^4-8x^3-13x-24$

10. $g(x)=x^5+x^4-3x^3+5x+2$

Use the Rational Zero Theorem to list possible rational zeros for each polynomial function.

11. $h(x) = 3x^4 - 8x^3 - 13x - 24$

12. $f(x) = 2x^4 - 9x^3 + 4x^2 + 21x - 18$

Use the given zero to find the remaining zeros of each polynomial function.

13. $s(x) = 2x^4 - x^3 + 17x^2 - 9x - 9; \quad -3i$

14. $P(x) = x^4 + 2x^2 + 8x + 5; \quad 1 + 2i$

Find the polynomial function *P*, with real coefficients, that has the indicated zeros and satisfies the given conditions.

15. Zeros: $3, \ 2i$; degree: 3

16. Zeros: $\pm 1, \ 1 - 3i$; degree: 4