**2-3 Practice**

***The Remainder and Factor Theorems***

**Divide using long division.**

**1.** (2 + 14 – 2 – 14*x*) ÷ (*x* + 7) **2.** (3 – 10 + *t* – 5) ÷ (*t* – 4)

**Divide using synthetic division.**

**3.** ( + – 10) ÷ (*y* + 3) **4.** ( – – 10 + 4*n* + 24) ÷ (*n* + 2)

**5.** ( – 3 – 15 + 19*x* + 30) ÷ (*x* – 5) **6.** ( – 8 – 29*x* + 180) ÷ (*x* – 10)

**Find each *f*(*c*) using synthetic substitution.**

**7.** *f*(*x*) = + 6 – 9*x* – 54 ; *c* = 3 **8.** *f*(*x*) = 3 – 6 – 30 ; *c* = 2

**9.** *f***(***x***)** = – + 2– + 7*x* + 5 ; *c* = –1 **10.** *f*(*x*) = + 6 + 9*x* – 3 ; *c* = 4

**Use the Factor Theorem to determine if the binomials given are factors of *f*(*x*).   
Use the binomials that are factors to write a factored form of *f*(*x*)*.***

**11.** *f*(*x*) = – 7*x* − 6; (*x* + 2), (*x* – 1)

**12.** *f*(*x*) = 2 + − 50*x* − 25; (*x* + 5), (*x* – 5)

**13.** *f*(*x*) = – – 7 + *x* + 6; (*x* + 2), (*x* + 4)

**14.** *f*(*x*) = 3 – 4 – 61 + 22*x* + 40; (3*x* + 2), (*x* – 1)

**List all possible rational zeros of each function. Then determine which, if any, are zeros.**

**15.** *f*(*x*) = – – 8*x* + 12

**16.** *h*(*x*) = 2 – 3 – 2*x* + 3

**17.** *g*(*x*) = + 3 – 6*x* – 8

**2-3 Practice**

***The Remainder and Factor Theorems***

**Divide using long division.**

**1.** (2 + 14 – 2 – 14*x*) ÷ (*x* + 7) **2.** (3 – 10 + *t* – 5) ÷ (*t* – 4)

**Divide using synthetic division.**

**3.** ( + – 10) ÷ (*y* + 3) **4.** ( – – 10 + 4*n* + 24) ÷ (*n* + 2)

**5.** ( – 3 – 15 + 19*x* + 30) ÷ (*x* – 5) **6.** ( – 8 – 29*x* + 180) ÷ (*x* – 10)

**Find each *f*(*c*) using synthetic substitution.**

**7.** *f*(*x*) = + 6 – 9*x* – 54 ; *c* = 3 **8.** *f*(*x*) = 3 – 6 – 30 ; *c* = 2

**9.** *f***(***x***)** = – + 2– + 7*x* + 5 ; *c* = –1 **10.** *f*(*x*) = + 6 + 9*x* – 3 ; *c* = 4

**Use the Factor Theorem to determine if the binomials given are factors of *f*(*x*).   
Use the binomials that are factors to write a factored form of *f*(*x*)*.***

**11.** *f*(*x*) = – 7*x* − 6; (*x* + 2), (*x* – 1)

**12.** *f*(*x*) = 2 + − 50*x* − 25; (*x* + 5), (*x* – 5)

**13.** *f*(*x*) = – – 7 + *x* + 6; (*x* + 2), (*x* + 4)

**14.** *f*(*x*) = 3 – 4 – 61 + 22*x* + 40; (3*x* + 2), (*x* – 1)

**List all possible rational zeros of each function. Then determine which, if any, are zeros and completely factor.**

**15.** *f*(*x*) = – – 8*x* + 12

**16.** *h*(*x*) = 2 – 3 – 2*x* + 3

**17.** *g*(*x*) = + 3 – 6*x* – 8