

```

> f := 3*x^3-5*x+4;
g := 7*x^4+8*x-5;
      f:= 3 x3 - 5 x + 4
      g:= 7 x4 + 8 x - 5
(1)

```

```

> a := expand(f*g);
      a:= 21 x7 - 35 x5 + 52 x4 - 15 x3 - 40 x2 + 57 x - 20
(2)

```

```

> gcd( a, diff(a,x) );
      1
(3)

```

```

> p1,p2,p3,p4 := 11,13,17,19;
      p1,p2,p3,p4:= 11, 13, 17, 19
(4)

```

```

> Factor(a) mod p1;
      10 (x2 + 4 x + 7) (x + 7) (x4 + 9 x + 4)
(5)

```

```

> Factor(f1/3) mod p1;
      (x2 + 4 x + 7) (x + 7)
(6)

```

```

> Factor(f2/7) mod p1;
      x4 + 9 x + 4
(7)

```

```

> Factor(a) mod p2;
      8 (x + 4) (x3 + 7 x + 10) (x + 2) (x2 + 7 x + 2)
(8)

```

```

> Factor(a) mod p3;
      4 (x3 + 4 x + 7) (x3 + 4 x2 + 16 x + 2) (x + 13)
(9)

```

```

> Factor(a) mod p4;
      2 (x2 + 3 x + 12) (x2 + 16 x + 16) (x3 + 11 x + 14)
(10)

```

```

> D3 := {1,3,4,6,7}; D4 := {2,3,4,5,7}; D3 intersect D4;
      D3:= {1, 3, 4, 6, 7}
      D4:= {2, 3, 4, 5, 7}
      {3, 4, 7}
(11)

```

```

> f33 := (x^3+4*x+7); # f33 := x^3 + 4*x^2 + 16*x + 2;
      f33:= x3 + 4 x + 7
(12)

```

```

> f43 := x^3 + 11*x + 14;
      f43:= x3 + 11 x + 14
(13)

```

```

> f := chrem( [21*f33,21*f43], [p3,p4] );
M := p3*p4;
f := primpart(mods(f,M));
      f:= 21 x3 + 288 x + 28
      M:= 323
      f:= 3 x3 - 5 x + 4
(14)

```

```

> a;
      21 x7 - 35 x5 + 52 x4 - 15 x3 - 40 x2 + 57 x - 20
(15)

```

```

> divide(a,f,'q'); q;
      true
      7 x4 + 8 x - 5
(16)

```