Exercise 2.6.5

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   SageMath version 9.0, Release Date: 2020-01-01
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```
>>> var('x,y,z,w')
```

```
   (x, y, z, w)
```

```
>>> load("~/Desktop/buch.sage")
>>>
>>> # (a)
>>> f = 4*x^2*z - 7*y^2; g = x*y*z^2 + 3*x*z^4;
>>> Spoly(f, g, 0)   # 0 for lex order
```

$$\frac{1}{4}\left(4\ x^2\,z-7\ y^2\right)y\,z-\left(3\ x\,z^4+x\,y\,z^2\right)x$$

```
>>>
>>> #(b)
>>> f = x^4*y - z^2; g = 3*x*z^2 - y;
>>> Spoly(f, g, 0)
```

$$-\frac{1}{3}\left(3\ x\,z^2-y\right)x^3\,y+\left(x^4\,y-z^2\right)z^2$$

```
>>>
>>> #(c) - use a fourth variable w in place of i
>>> f = x^7*y^2*z + 2*w*x*y*z; g = 2*x^7*y^2*z + 4;
>>> Spoly(f, g, 0)
```

$$2\ w\,x\,y\,z-2$$

```
>>>
>>> #(d)
>>> f = x*y + z^3; g = z^2 - 3*z;
>>> Spoly(f, g, 0)
```

$$-\left(z^2-3\ z\right)x\,y+\left(z^3+x\,y\right)z^2$$

```
>>>
```