

Math 502 Metamathematics I
Problem Set 7

Due: Friday October 30

Let P be the following program.

- 1) J(1,2,7)
- 2) S(1)
- 3) S(2)
- 4) S(2)
- 5) J(1,3,5)
- 6) J(1,1,,1)
- 7) T(2,1)
- 8) HALT

Let Q be the following program.

- 1) S(1)
- 2) HALT

Let $h(x, y, z)$ be the partial function computed by P and $g(x)$ be the function computed by Q .

1) Let $f(x, y)$ be defined by

$$\begin{aligned}f(x, 0) &= g(x) \\f(x, n + 1) &= h(x, n, f(x, n))\end{aligned}$$

Follow the proof of Theorem 6.15 to construct a program to compute f .

2) Follow the proof of Theorem 6.16 to construct the primitive recursive functions g_1, g_2, g_3 and j describing the computation of P .